# ROCKS AND MINERALS

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Stibnite Crystal
Yokohi Mine,
Ichinokawa, Japan
Elmer B. Rowley collection

60c

SEPTEMBER - OCTOBER, 1955
Whole Number 248

# RARE MINERALS

The following RARE SPECIES and varieties, come from a collection assembled in 1905 and are from world-wide localities known at that time. They are offered at the uniform price of $2.50 each plus postage. They are of average quality. Approximate overall sizes (including matrix, if any) are given. Only one specimen of each mineral is available.

| | |
|---|---|
| Ardennite | 2½x2½ |
| Andorite | 1½x1¼ |
| Arseniopleite | 2x1½ |
| Anomalite | 2½x2½ |
| Bertrandite | 2x1½ |
| Breislakite | 2x1¾ |
| Bavalite | 2x1½ |
| Barcenite | 1¾x1½ |
| Beudantite | 1½x1 |
| Berthierite | 2½x2 |
| Connellite | 2x1½ |
| Carphosiderite | 2x2 |
| Chlorophyllite | 2½x2½ |
| Cacoxenite | 2x2 |
| Cronstedtite | 1½x1½ |
| Clausthalite | 2½x1½ |
| Destinezite | 2½x1¾ |
| Euphyllite | 1½x1½ |
| Epididymite | 1x¼ |
| Evansite | 2½x2½ |
| Enysite | 1¾x1¼ |
| Eleonorite | 1½x1½ |
| Faujasite | 2½x1½ |
| Fayalite | 2½x1½ |
| Freislebenite | 1x½ |
| Gedrite | 2½x1½ |
| Greenovite | 2x2 |
| Ganomalite | 2x2 |
| Granuline | 2x1¾ |
| Hisingerite | 2x1½ |
| Haydenite | 2½x2 |
| Humite | 2x1¾ |
| Ivigtite | 2x2 |
| Johnstrupite | 2½x2 |
| Jenkinsite | 1x1 |
| Kentrolite | 2x1¼ |
| Koninckite | 1½x1½ |
| Knopite | 1½x1 |
| Lavendulan | 3x1½ |
| Lanthanite | 1¾x1½ |
| Lithiophorite | 3x2 |
| Lawrencite | 1½x1 |
| Leuchtenbergite | 2x1½ |
| Liskeardite | 2x1½ |
| Liebenerite | 2x2 |
| Mosandrite | 1½x1½ |
| Melanophlogite | 2x2 |
| Melanocerite | 2x1½ |
| Masonite | 2½x2 |
| Milarite | 2x1¼ |
| Meionite | 2½x2 |
| Massicot | 2x1½ |
| Melanotekite | 3x2 |
| Nadorite | 2½x2 |
| Nocerite | 1½x1½ |
| Noselite | 2x1¾ |
| Oellacherite | 3x2 |
| Ptilolite | 2x1¼ |
| Prosopite | 2x2 |
| Plumboferrite | 2½x2½ |
| Plumbocalcite | 3x2 |
| Pinakiolite | 2x1½ |
| Randite | 1½x1½ |
| Rubellan | 2½x2 |
| Siegenite | 1½x1 |
| Sellaite | 1½x1½ |
| Sideronatrite | 1" |
| Sal-Ammoniac | 1½x1½ |
| Steenstrupine | 3x2 |
| Sarkinite | 2x¾ |
| Synadelphite | 1¾x1½ |
| Tamarite | 2x2 |
| Thuringite | 3x2½ |
| Tyrolite | 2x1¼ |
| Wohlerite | 2x2 |
| Wiikite | 2x1½ |
| Wapplerite | 3x2 |
| Xanthoconite | 1¾x1¾ |
| Yttrotantalite | 2x2 |
| Zunyite | 2x1½ |


## HUGH A. FORD

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**No list furnished, but inquiries for specific minerals welcomed.**

# ROCKS and MINERALS

PETER ZODAC, Editor and Publisher

America's Oldest and Most Versatile Magazine for the Mineralogist, Geologist, Lapidary.

Published Bi-Monthly

OFFICIAL JOURNAL

ROCKS & MINERALS ASSOCIATION

WHOLE NO. 248 VOL. 30. NO. 9-10 September-October, 1955


## *Contents*


SOME FOSSIL WORM TUBES OF WESTERN WASHINGTON—*Wilbert R. Danner* ..... 451
TOURMALINES BY THE CASE—*Commander John Sinkankas* ..... 458
BROWN TOURMALINE—A NEW AMERICAN LOCALITY—*Elmer B. Rowley* ..... 461
THE SOMABULA FOREST DIAMOND FIELD, SOUTHERN RHODESIA—*M. C. Bandy* ..... 464
PROSPECTING IN 1954—*John Dillingham* ..... 474

DEPARTMENTS

WORLD NEWS ON MINERAL OCCURRENCES ..... 479
IT CAN HAPPEN TO YOU! ..... 490
THE SAND COLLECTOR—*Peter Zodac* ..... 492
FOSSIL DEPARTMENT—*Howard V. Hamilton* ..... 497
COLLECTOR'S COLUMN—*A. Cal Lector* ..... 501
CLUB AND SOCIETY NOTES ..... 502

MISCELLANEOUS

CHIPS FROM THE QUARRY ..... 450
OUR ROCK COLLECTING VACATION—*James Smedley* ..... 472
FIELD TRIP (POEM)—*Francis E. Schiller* ..... 473
BARITE CRYSTALS IN TREE CASTS—*Ralph E. Platt* ..... 478
AMERICA'S FIRST MICA MINE—*Paul M. Tilden* ..... 499
NOVICE COLUMN ..... 500
COLLECTOR'S KINKS—Hardening Laumontite—*Joseph Barr* ..... 507
LOOKING BACK—25 YEARS AGO IN ROCKS AND MINERALS ..... 507
PUBLICATIONS RECENTLY RECEIVED ..... 508
INDEX TO ADVERTISERS ..... 560



Entered as second-class matter September 13, 1926, at the Post Office at Peekskill, N. Y. under the Act of March 3, 1879.
Title registered in U. S. Patent Office.


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Specially written articles (as contributions) are desired.
Subscription price $3.00 a year; Current numbers, 60c a copy. No responsibility is assumed for subscriptions paid to agents and it is best to remit direct to the Publisher.
Issued bi-monthly on the 20th of the even months.
*Authors alone are responsible for statements made and opinions expressed in their respective articles.*

ROCKS and MINERALS, BOX 29, PEEKSKILL, N. Y., U.S.A.
(Office — 157 WELLS STREET — Tele. Peekskill 7-3185)

# CHIPS FROM THE QUARRY

## DEALER LOSES ALL IN HURICANE

On the night of Aug. 18, 1955, the terrible hurricane (Diane) struck the little city of East Stroudsburg, Penn., inflicting heavy damage to the community. One of its victims was Pocono Mineral Shop, owned by Mr. and Mrs. Charles Litts of 21 Park St., one of our good subscribers and advertisers. We were shocked to hear of their great loss and our sympathy was conveyed to them along with offers of help (free advertising, for one thing). Mrs. David H. Keller, another subscriber and friend of the Litts, first gave us some details of the tragedy. Here is her letter, dated Sept. 18, 1955:

Editor R&M:

"This morning, Mr. and Mrs. Charles Litts, asked me to write you conveying their thanks for all that you have done for them and would you please accept my word until they get time to write you themselves.

"They, with several hundred others in this area, are victims of Diane. Their mineral shop was washed away with all but a scattered few pieces of minerals, both those in the shop and in the storehouse. While their home was badly flooded, causing the loss of all but the metal kitchen furniture, they did escape, but barely. Now they are busy repairing the house which was not especially damaged, fortunately.

"Diane was a very terrible thing and unless one has seen the ravages wrought by a cloudburst (we had 9 inches of rain from Connie which saturated the ground and when Diane came along with her reported 18 inches in the mountains and 14 inches here within a week after Connie) no one can possibly imagine the things which even a tiny creek can do."

Here is a letter from Mr. and Mrs. Litts, dated Sept. 23, 1955:

Editor R&M

"We received your letter of Sept. 20th. Thanks a lot for your generous offer to advertise free our minerals for us, but—there is nothing left to advertise. We salvaged only a very few mineral specimens and those had been stored in the cellar. The polished slabs of marble and granite of which we had a large stock had been stored in a shed in the back yard. The shed has disappeared with all the slabs.

"The other shed we had had been bolted to a concrete floor and all we found of it was part of the floor. This shed was full of minerals and they are all gone except for a few pieces which are so badly cracked and battered from rolling around in the water that they were not worth picking up.

"Our home did not suffer too much—mostly water and mud damage."

### Picture on the cover

The picture on the cover of this issue is of a very fine stibnite crystal in the collection of Elmer B. Rowley, 214 Ridge St., Glens Falls, N. Y. The crystal, 1½" x 3" x 8" in size, comes from the Yokohi antimony mine in Ichinokawa, Iyo Province, Shikoku Island, Japan. Stibnite is the chief ore of antimony and the Yokohi mine has furnished the largest and most beautiful specimens known; some of the stibnite crystals from this mine were more than 2 feet long and being lead-gray in color, slender, and highly lustrous resembled polished swords.

### Anthony's Nose Mine Closed to Public

James Francis of Peekskill, N. Y., called at the offices of R&M on Wed., May 25, 1955, to notify us that the famous Anthony's Nose pyrrhotite mine, near Peekskill, N. Y., was to be officially closed to the public that day. He was instructed by the owner of the property, a Mrs. Boomer, to post signs around the mine—anyone now trespassing on the property is liable to get arrested.

The Anthony's Nose Mine, abandoned for many years, has furnished many interesting minerals, and its closing is a heavy blow to collectors.

### Attention Subscribers

When you send in a change of address, please let us have your old address also. It helps us in locating your name in our files.

# Some Fossil Worm Tubes of Western Washington

WILBERT R. DANNER

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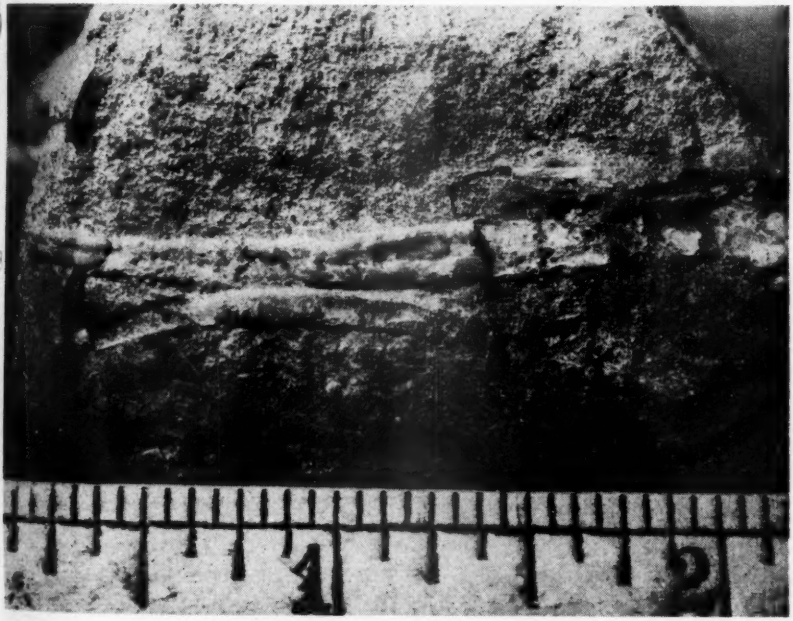
The University of British Columbia
Vancouver 8, British Columbia

In the summer of 1947 the writer was engaged in geological field work in the northeastern portion of the Olympic Mountains of Washington. One day while examining the rocks on the west side of Buckhorn Pass I came across several pieces of sandstone containing on their surface many small flattened tubes. They caused me great excitement because they were the first fossils I had found in the Olympics after several years of searching. But what were they? Later they were shown to several geologists but none could identify them. In 1949 other specimens were found in the western foothills of the Cascade Mountains near the town of Sultan.

The first clue to what they were came from Professor F. A. McMillin, director of the Geology Department of the College of Puget Sound in Tacoma. He and his students had collected several fossils in the eastern Olympic Mountains that had been identified as worm imprints, tubes, and burrows. A comparison of his fossils with mine indicated they were similar.. The collections were sent to Professor B. F. Howell of Princeton University, specialist on fossil worms who is making an intensive study of them.

The Buckhorn Pass specimens closely resembled tubes found in Alaska many years ago. In 1895 W. H. Dall, geologist of the United States Geological Survey, was making an investigation of the coal deposits of Alaska. On Woody Island in



1. Worm tubes from road cut near Heart of the Hills Ranger Station, Olympic National Park.

the Kodiak Island group of southern Alaska he cames across an unfamiliar fossil. He described it as: "A singular organism like a flattened *Dentalium,* but probably a worm tube." (The Dentalia are molluscs that make a tapering tube composed of calcium carbonate).

In 1899 geologists with the Harriman Alaska expedition collected several more of these "tubes". Most were found on Pogibshi Island opposite the village of Kodiak. Others were found near Hidden Glacier on Russell Fiord, Yakutat Bay, some 500 miles east of the Kodiak area. A single specimen was collected from a glacial boulder in the moraine of Columbia glacier at Prince William Sound about 300 miles northeast of Kodiak. In the description of fossils collected by the expedition, E. O. Ulrich, paleontologist, named this fossil *Terebellina palachei.* The genus name *Terebellina* was derived from its resemblence to the worm genus *Terebella* living now in the sea and found as fossils in the Liassic and Upper Jurassic of Germany. The species name *palachei* was assigned to honor Dr. Charles Palache, one of the geologists of the expedition.

The first mention of similar fossils occurring in Washington was in 1909 when Ralph Arnold, writing about the rocks of the Sawtooth Range of the Olympic Mountains, mentions finding: "A small fragment of a fossil resembling *Dentalium.*"

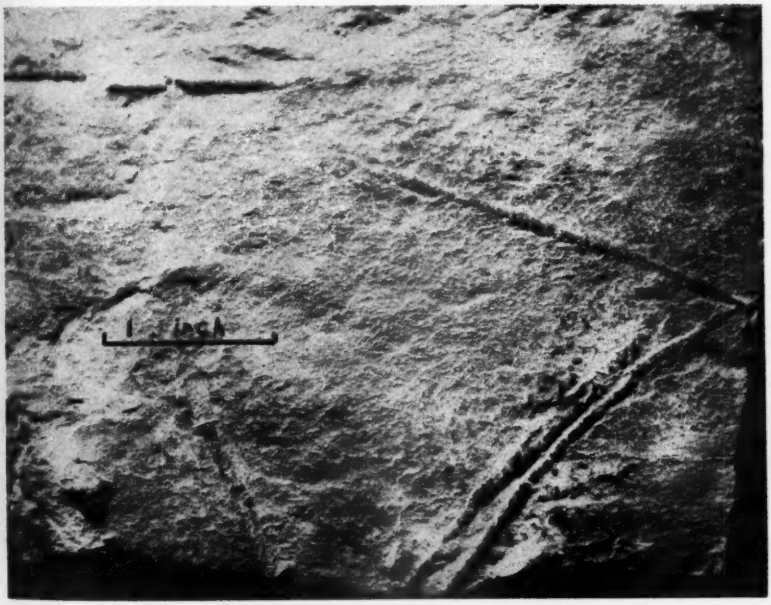
The fossil worm tubes are now known to occur in two areas of western Washing-

2. Worm tubes from road cut near Heart of the Hills Ranger Station, Olympic National Park.

ton. The interior of the Olympic Mountains and the western foothills of the Cascade Mountains in King and Snohomish counties. They are found on bedding planes in argillite, shale, and fine grained sandstone. Usually several tubes are found together. Some of them are curved, others are straight. They taper at one end. There is some difference in size, the largest ones being up to three inches long and approximately 3/16 inches wide. Usually they are all about the same size at any one locality. It is possible that their environment had something to do with this, a poor environment producing smaller forms. However, the different sizes may be different species.

Many of the specimens are creased down the middle as a result of flattening of the shell under the pressure of the overlying rock. A microscopic examination of some of the tubes showed them to be composed of tiny clastic grains, mostly quartz, cemented together. This seems to be the original material of the tubes there being no evidence of replacement by a different material or another type of grain. Evidently the tubes were built by the worm adding new grains at the larger and open end of the tube as it grew. Perhaps a mucus secretion held the grains in place. Although most of the tubes are flattened considerably, a few almost circular ones are found. On some of them the wall thickness makes up more than two-thirds of the total diameter of the tube.

The rocks in which the fossils have been found are part of a thick sequence of highly folded slates, argillites, graywackes, sandstones, shales, and volcanic rocks. Minor amounts of chert and limestone also occur. It is thought that these rocks accumulated in a geosyncline (long narrow depression in the earth's crust). Deposition in this geosyncline was rapid and in deep water. No other fossils or traces of life have been found with the




3. Worm tubes, Proctor Creek, Snohomish County, Washington.

worms indicating that the environment in which they lived was not favorable for an abundance of life.

Since these fossils are almost the only ones in this sequence of sediments in Washington, it is important to try and find out their geologic age. The same problem exists in regards to the Alaskan localities. The rocks of the Alaskan and Washington areas are remarkably similar and appear to have been deposited in the same type of environment and maybe at the same time.

In 1938 a Lower Cretaceous fossil, the arctic clam *Aucella,* was collected with tubes of *Terebellina* on Kruzof Island, Alaska suggesting that this age might be their age. Such an age assignment would fit well the similar rocks of Washington. In the summer of 1954 fossil *Aucellas* were found at two places between the Pilchuck and Sultan Rivers in Snohomish County, Washington. Although no worm tubes were found with them, worm tubes occur in very similar rocks a few miles to the south.

Similar rocks and fossils are found in New Zealand at several localities. The worm tubes there are called *Torlessia mackayi.* The specimens illustrated here were sent to the writer by W. H. Wellman, Senior Geologist of the New Zealand Geological Survey. Some of the tubes are striated, a characteristic not noted on the American forms. Mr. Wellman states:

4. Worm tubes from ridge east of Lake Calligan, King County, Washington. Collected by H. Bethel.

"The age is uncertain but it is generally accepted as being Triassic."

There is some question whether all of these fossils are actually worm tubes. Similar specimens have been described in California as being the tests (shells) of a one-celled animal (foraminifer) called *Bathysiphon*. Ogle (1953) has mentioned forms of *Bathysiphon* up to 3 inches in length, resembling pine needles, collected from the Upper Jurassic-Lower Cretaceous Yager formation of the Eel River valley area of northern California.

**Worm Fossil localities in Washington**

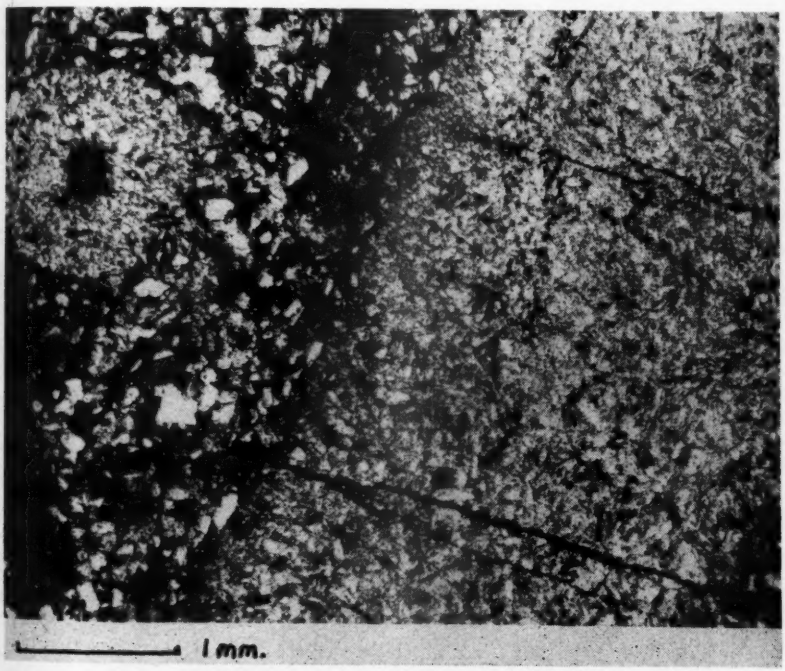
In Snohomish and King Counties worm tubes have been found at several localities within an area containing the following approximate boundaries: The Pilchuck River on the north. The lower canyon of the Sultan River, Elwell Creek, North Fork Creek, and Tokul Creek on the west. The Snoqualmie River on the south. Mt. Persis, Mt. Lee, Mt. Phelps, Twin Peaks, and Bessemer Mountain on the east. Some unfossiliferous volcanic rocks occur within this area but most of it is underlain by sedimentary rocks. Some specific localities are as follows:

**Wallace Lake, Snohomish County.**

A specimen of fine grained sandstone containing two tubes was found in a road cut near the northeast side of Wallace Lake. This area is reached by following the Wallace Lake road from the community of Goldbar.

**Proctor Creek, Snohomish County.**

1. The Proctor Creek CCC road leaves U. S. Highway 2 on the east side of Proctor Creek. Worm tubes have been found in road cuts along the west fork of this road about a mile south of the




5. Photomicrograph of cross section and longitudinal section of worm tubes, Proctor Creek, Snohomish County, Wash.

highway.

2. Go up the Mt. Persis logging road from U. S. Highway 2 between Proctor Creek and Anderson Creek This road has several branches but follow it around the west side of Mt. Persis to end near Proctor Creek. Approximately the last two miles of this road has been abandoned for a long time and is now only a trail. From the road end follow up Proctor Creek a short distance to a rock outcrop on west bank. Worm tubes are found in argillite in this outcrop.

**Sultan Area, Snohomish County.**

Follow the McCoy Creek logging road starting about a mile south of the town of Sultan on the south side Skykomish River road. Go past Lake Sixteen to base of steep hill. Worm tubes occur in road cuts along this road approximately a mile up from the base of the hill. The road continues eastward into the mountains.

**Lake Calligan, King County.**

A single specimen of quartzitic sandstone containing several well preserved tubes was found by geologist Dr. H. Bethel on the ridge between two creeks entering Lake Calligan from the east. Lake Calligan is about 3½ miles by trail from the North Fork of the Snoqualmie River.

All of this area in Snohomish and King Counties is subject to closure during the summer because of extreme fire danger. Many of the roads will contain gates which will be locked during the fire season and during logging operations. The passibility of the roads varies greatly from year to year. All are rough. The area is covered by the Sultan topographic quadrangle of the United States Geological Survey. Most of the logging roads will be found only on late editions of county maps.

**Olympic Mountain Localities**

In the Olympic Mountains the worms have been found mainly within the area of the Olympic National Park. A collecting permit is granted by the Park only to people engaged in scientific research. Within the Park area Constance Pass, Obstruction Point, and a road cut near

6. *Torlessia mackayi* from Red Rocks Point, Wellington, New Zealand.

the Heart of the Hills Ranger Station on the new Hurricane Ridge road have produced good specimens. They are most frequently found in the sedimentary rocks of the Soleduck formation near its contact with the Metchosin volcanics. A few specimens have been found outside of the Park. One such locality is on the west side of Buckhorn Pass. This is in the northeastern portion of the mountains within the Olympic National Forest. The area is covered by the Tyler Peak Topographic map. Good specimens were found on a rock slide a couple of hundred feet below Buckhorn Pass on the Dungeness River side. This locality is reached by about 10 miles of trail up the Big Quilcene River.

This brief article was written to bring this easily unnoticed fossil to the attention of the many amateur geologists and fossil collectors of western Washington. The writer would appreciate hearing about any additional localities.

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7. *Torlessia mackayi* from Red Rocks Point, Wellington, New Zealand. Collected by H. W. Wellman, New Zealand Geological Survey.

# TOURMALINES BY THE CASE

**By Commander John Sinkankas**
640 Alameda Blvd., Coronada 18, Calif.

Scarcely known except to the residents living in the immediate vicinity of San Diego and the county of the same name in Southern California, the Southern California Exposition and San Diego County Fair anually puts on a mineral and gem show which is worthy of the attention of the most discriminating collector and cutter. In the compass of one large hall in one of the Del Mar Fair Ground buildings is gathered together what is possibly the most complete and varied collection of San Diego County minerals in existence anywhere. Of course they do not belong to one individual, in fact, several dozen exhibitors were represented, but this show is a magnetic drawing card which brings out rare and treasured specimens, which, taken as a whole, would do credit to any museum fortunate enough to possess them. Aside from the mineral and gemstone specimens exhibited, almost half of the cases on display were devoted to lapidary work of high quality. This included jewelry, hard-stone carving, cut and rough displays, as well as the usual facet and cabochon collections.

The Fair runs from June 24th through July 4th each year and is impressive both in respect to size and the obviously careful planning beforehand. The mineral and gem section owes much of its success to Roy Kepner and Barbara Biewener, his able assistant, who together are delegated full responsibility for the success of this popular feature of the Fair. This year marks the ninth of Fair history in which earth science features have been included. According to Mr. Kepner, its reputation has been steadily enhanced by the passage of time, until now, more cases are required than can be filled. The net result has been to place a premium on quality instead of quantity and consequently each exhibitor is hard-pressed to decide which items to include and which to leave home.

We have all seen high quality exhibits at various conventions and major society shows but the writer has seldom seen anything to top the specimens seen at this one. Most of our large museums in the country have individual mineral specimens which may excel those shown at the Del Mar Fair Grounds, but for scope, variety, and particularly in respect to tourmalines, they cannot match those to be seen at the Fair, It is a matter of keen regret to most San Diegans that their own local public museum does not contain a county collection worthy of an institution in the midst of one of the most famous gem-producing areas the world has ever known. Most of the finest specimens produced in the heyday of gem mining were sold as fast as they were produced and the marvels from underground received more notice from the Eastern and foreign collectors than they did from the handful of earnest connoisseurs residing in the county. Thus, it is a fact that few public institutions west of the Mississippi boast of truly fine San Diego specimens but times are gradually changing, and, as the Fair shows, the local society members are once again accumulating the treasure of specimens rightly belonging within the county. It has been a hard process! the mines which yielded their glittering crystals from shallow surface workings are all closed down, a few hardy souls still work slowly and laboriously within old, caved-in mines, while others screen the dumps for the few bits overlooked by the miners of yesteryear. It has been a painful process to accumulate these specimens and to a true native collector, the few bright crystals won by such toil have no measurement of value in terms of dollars and cents, they are old friends and companions and simply not mere chattels to be sold to the highest bidder. Each collector in the County soon gets to know the stellar pieces in everybody's collection, so-and-so's wonderful bi-color, and so-and-so's beautiful morganite. Each year they show up at the Fair, where amid skilfull window-dressing, their lovely clarity and color are set off to best advant-

age.

In addition to strictly County minerals which are exhibited in their own categories and merit their own special awards, minerals from all over the world are also shown, and a fine lot they are too. This year's show exhibited an intriguing collection of quartzes formed by Mrs. Alice Walters of San Diego which rated the first award in the individual species class. Four cases were filled with handsomely displayed quartzes in every conceivable variation, some in magnificent museum-size crystallizations. Of more than passing interest can be mentioned a fine Japanese twin with each half almost identical in size and form and measuring about 3" in length for each of the individuals. An etched and corroded doubly-terminated rock crystal from Bolzano, Italy, about 5" in length, was noteworthy not only for its etch marks but also for its exceptionally fine clarity and luster. A phantom xl showing gold crystallized on the phantom face would appeal to gold collectors as well as quartz fanciers. The famous scheelite locality in the Greenhorn Mountains of Kern County, California, provided Mrs. Walters with a large (6" x 3½") tourmalinated quartz xl upon which is implanted a clear, doubly-terminated scheelite of about an inch in length.

In general minerals, Bob Winstead of Ramona earned top honors for a number of cases displayed magnificent samples of the commoner minerals as well as an impressive variety of those which are quite rare. In this category might be mentioned a suite from Oruro, Bolivia—fist-size specimens of andorite, cylindrite, and stannite. Other items: a fine demantoid garnet specimen from Franscia. Italy; a single blue kyanite blade of 2" by 8" from Sultan Hamud, Kenya; a beautifully shaped brazilianite; a phosgenite from Monte Poni, Sardina,—the crystal about an inch long, perfect, and on matrix; a large blade of vivianite from Poopo, Bolivia; a tremendous scheelite of orange-brown color from Wyengheung, Korea (a rude but smooth-surfaced pseudo-octahedron of about 5" across!); a group of rose quartz xls from Brazil; a squarish tabular xl of epidote from Sulzer, Alaska, about 2" or slightly more on edge, doubly terminated.

First place for a collection of 25 minerals from any locality went to Mr. H. Proctor who exhibited a remarkable geode-like mass of stibnites form Manhattan, Nevada; a fine crocoite specimen from Tasmania; and exceptionally clean arsenopyrite from Yugloslavia; as well as a spendid wulfenite from Mapimi, Mexico.

Among miniatures, Mr. John T. Christensen of San Diego, won first award with a neat cabinet of fine specimens. Mr. Winstead again won an outstanding award for single minerals with a huge matrix specimen of peach-colored beryl upon feldspar from the Vanderberg Mine, Pala, Calif. The crystal itself is about 5" x 3½", well-terminated on one end, and artistically standing in relief upon the matrix. Mr. W. Woynar earned top place for a splendid accumulation of minerals from an individual San Diego County mine, in this case, the Himalaya at Mesa Grande. His case carried a fine matrix specimen showing a deep pink tourmaline crystal in relief resting upon criss-crossed dark-colored books of lepidolite mica of several inches in diameter. Associated minerals were feldspar, quartz, and other tourmalines. One catseye specimen in this cabinet was remarkable for the fineness and even-distribution of the tubes, though small, it shone like a hank of white silk. Speaking of the Himalaya Mine, the present owner and operator, Mr. Ralph R. Potter, displayed a case of minerals collected from this famed deposit, one item of great intrest being a 763 carat etched morganite crystal of deep peach color. Also in his exhibit is one of the finest lepidolite specimens to be seen anywhere, a large book with the edges scalloped by minute terminations extending over the top; The appearance is like a mass of silver which has been incised in triangular patterns all over its surface.

Mr. W. E. Granzow exhibited a case of San Diego minerals in which was a large plastic-foam block containing hun-

dreds of brownish-green tourmaline crystals—all obtained from a fortunate curiosity which led him to break open a piece of dike material discarded upon the dumps of the Himalaya mine. In the inside was a gem pocket from which all of these crystals came!

Naturally the star of the show was the Touramline and his appearance has been delayed to the last. It is difficult to describe the nuances of color represented by San Diego tourmalines. Greens and pinks are known to everyone but the bicolors, the multi-colors, and the blues and yellows, are perhaps not as well known. Several persons showed pink and yellow-green pencils of ¼" diameter and 2"-3" in length. One pencil in the Winstead collection is a deep yellow on one end changing abruptly to blue. It is hard to credit the eyes, especially if one is accustomed to thinking of tourmalines from Brazil, but there are colors to be seen in this show which are quite unlike any others. One color is particularly prized, the variety known locally as Emeralite. It is blue but what a blue!—completely unstained by any trace of dinginess or dark, it is just a light vivid blue, purer than the sky! Among the reds and greens were to be seen the bicolors which are so effective in coloration because of the two complements appearing side by side. Some of these were also catseye material. Odd colors, grays, green, deep blues, as well as zoned crystals were also shown, even the extremely rare achroites. Altogether, it is the tournalines that make the mineral display worthy of anyone's visit, these plus the associated beryls, garnets, quartzes, and other accessory minerals, are the objects which have captured the fancies of collectors the world over and indeed, still hold them today.

On the lapidary side, outstanding cut specimens of kunzite were most prominent although a fine cut scapolite owned by Mr. N. Dawson was perhaps the most unusual lapidary item to be displayed although other cut stones were larger in size. The kunzites were mainly the work of Mr. George A. Ashley who gained recent fame for his cutting of the 3000 carat Brazilian blue topaz for Mr. Edward Swoboda of Los Angeles. Mr. Ashley's skill with kunzite is proverbial, as owner and miner in the Pala kunzite mines, he handles its product from unearthing to its final emplacement upon some suitable mounting. Lately, his interests have taken a new turn toward carving, a display of his work in this field rating a first place and an outstanding award for a Wyoming jade link bracelet. The latter is carved from one piece of nephrite yielding eleven interlocking rectangular links, each about ⅝" by ¾" in size. Other carvings shown were leaves and flowers in vesuvianite (Californite), nephrite, and very fine quality chrysocolla-impregnated chalcedony. Mr. Ashley also won first for cut stones from San Diego County with a suite of tourmalines, catseye and facet, smoky quartz, kunzite (93.5 ct.), triphane, golden beryl, blue topaz, and essonite garnet. First and second places for individual cut and rough specimens went to Mr. Norman Dawson for the aforementioned scapolite from Madagascar (42 ct.) and a 72 carat greenish spodumene from Brazil. Mrs. Dawson won first in a three-case exhibit of cut and rough gems from any locality, a type of exhibit which is considered to be of most interest to the general public since it relates directly the appearance of the rough to the finished product.

Among other items of interest to the cutting fraternity was a 5" sphere of rock crystal owned by Mr. Ashley and cut from rough from his Vanderberg Mine; a huge crystal of gem-quality kunzite exhibited by Mr. C. E. Reynolds which appeared to be about 10" in length, 6" in width, and almost 2" thick. This crystal is somewhat staggering!

In jewelry, the showing was disappointing as a whole, few cases being entered and only several showing mastery of the craft. One case, most skillfully decorated, won first place for heavy silver in a modern vein. This exhibit does great credit to its owner, Mr. James Parker, since the designs are both original and interesting. He is obviously a consummate craftsman, employing skilfully oxidation, hammer-work and brushing to

(Continued on page 501)

# BROWN TOURMALINE
# A NEW AMERICAN LOCALITY

**By Elmer B Rowley**
214 Ridge St., Glens Falls, N. Y.

A new American locality for brown tourmaline crystals was discovered in the Spring of 1954 along the north shore of Brant Lake in the Town of Horicon, Warren County, New York. The tourmalines were exposed when a new road was blasted through a ledge of Grenville limestone. Unfortunately the mineralized portion of the ledge was very narrow in width and the lower exposure of it has been covered completely by a macadam surfaced road precluding any further collecting in that direction. Most, and probably all, of the remaining exposed vein has been worked out, and it is extremely doubtful if any more crystals will be obtained at this locality.

### General Geology of Region

The general region along the southeastern flank of the Adirondack Mountain area is especially interesting mineralogically because of the numerous exposures of rock masses known as Grenville limestones. These masses were formed during early Precambrian History, (about 1 billion years ago), when ancient Grenville sediments which covered the area were invaded by extensive igneous intrusions. The newly formed rock structures produced by these extensive contact metamorphic activities represent the recrystallized phase of the chemical content of their original sedimentary materials. The rocks so formed are known as the Grenville series. Many of the Grenville sedimentary beds were actually melted into the hot molten mass, while some were in a semi-molten condition so that gases and vapors from the igneous mass carrying various chemical compounds penetrated them, forming the schists and gneisses found in relative abundance along the southeastern fringe area of the Adirondacks. The remaining sediments were altered to crystalline calcite. They are characterized by fine-to coarse-granular calcite of white-gray color. However, most of those original sedimentary beds contained quantities of included foreign material, and during the metamorphic process were changed into crystalline, and crystalled minerals of various kinds. The more common varieties found in this formation are graphite, garnet, sphene, pyroxene, scapolite (wernerite), apatite, diopside, and tourmaline. The two most prominent minerals found within the Adirondack crystalline limestone formations are graphite and pyroxene. The best developed crystals of any included minerals are always found in association with the most coarsely crystallized calcite grains, and, along the contact zone between the coarse - and the fine-granular portion of the formation.

The general result of all this extensive metamorphic activity has been to break up the Grenville series and scatter them throughout the region in no definite pattern of arrangement or sequence. By far the greater proportion of those series were absorbed within the intruding magma leaving no evidence of their passing. While many existing patches or "islands" of Grenville limestone may be found within the area, in a relative sense they are few in number. These few are potential hosts to fine mineral specimens and are therefore of great interest to mineral collectors.

### The Tourmaline Family

Tourmaline is a complex silicate of boron and aluminum in association with magnesium, iron, chromium, or various alkali metals, carrying the general formula $WX_3B_3Al_3(AlSi_2O_9)_3(O,OH,F)_4$. Its color ranges from rare colorless to common black, and beautiful intermediate shades of blues, greens and reds. It is sufficiently hard (7-7.5) to make very attractive and durable semi-precious gem stones. A most interesting feature of the colored tourmalines is the change in color from one end of a crystal to the other end, or from the center of the crystal outward.

### Crystal Structure

Crystallographically, tourmaline belongs to the rhombohedral division of the hexagonal system. The crystals may be recognized easily by their triangular outline when viewed in cross section in the direction of the length of the crystal. The trigonal symmetry of this crystal division is revealed most clearly by the three prominent rhombohedral faces on the terminal end of the crystal. A striking characteristic of all tourmaline crystals are the prominent vertical striations found on the prism faces. These striae represent the struggle, as it were, between the oscillating forces of original crystallization, one force acting to form the prism faces, the other force acting to form the rhombohedral faces.

### Piezoelectric Properties

The piezoelectric properties of the tourmaline family are well known. This property is developed when a crystal is subjected to either pressure or electrical current, resulting in the development of opposite charges of electricity at opposite ends of the "c" or "optic" axis. During crystallization this physical property develops negative charges at one end of the "c" axis, positive charges at the other end, and the differential result is apparent when a doubly-terminated crystal is examined carefully. Opposite terminal faces will be dissimilar. Wafers cut from tourmaline crystals have been used to control the wave-length frequency vibrations of electrical impulses, and, as pressure guages.

### Brown Tourmaline

Brown tourmaline is of relatively rare occurrence and when found usually occurs as stout, stubby crystals, in many instances so intimately intergrown with associated minerals as to form incomplete crystals. This variety is known as Dravite and is the magnesium-rich member of the tourmaline family carrying the formula $NaMg_3B_3Al_8(Al_3Si_6O_{27})(OH)_4$. The brown tourmaline crystals from the Brant Lake area are especially unique in being the first observed crystals of this variety from any other known locality in the world, bearing sharp hexagonal outline and of narrow, elongate habit. Their color is deep chocolate brown, and most of the crystals exhibit a brilliant lustre resembling high-gloss porcelain. Some of the more slender crystals are transparent and show striking dichroism, being brown in one direction and green-brown in another direction, both parallel to the plane of the horizontal axes of the crystal. It would be possible to cut flawless gem stones from these latter type crystals possibly 1-2 carats in size.

In 1886-87 magnificent brown tourmalines were discovered in an exposure of Grenville limestone on the south shore of Lake Harris about one mile east of the post-office in Newcomb, New York. This locality is about 30 air-miles west of the Brant Lake locality, and was described by *Frank L. Nason of the Geological Survey of New Jersey who was employed by the New York State Museum to assist in field work in that area. He states, "the area covered by the brown tourmaline locality is about ten feet wide by fifteen broad, and from three to five feet in depth. In this pocket the limestone has been changed to an almost transparent, yellowish-white and coarsely crystallized calcite." He further states, "the general habit of the crystals is short and stout. These crystals also enclose large rounded globules of calcite, and occasionally of quartz. It not infrequently happens that large, beautiful and apparently perfect crystals turn out to be no more than thin shells or series of shells, enclosing masses of calcite." Their short, stubby habit, rather frequent skeletal growth, and the enclosure of calcite globules, are in striking contrast to the Brant Lake crystals, which are characterized by their clean, sharp elongate habit, without distortion, or included foreign material. However, some of the crystals along the the contact zone are heavily coated with flake graphite.

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* Bulletin of the New York State Museum of Natural History, No. 4, August 1888.

**Minerals Found at Brant Lake Locality**

*Brown Tourmaline.* The crystals were scattered throughout the coarse-grained calcite of the vein, but the finest and largest crystals occurred along the contact zone between the coarse-, and fine-grained limestone in intimate association with heavy concentrations of flake graphite. The largest known crystal collected here measured about seven inches in length and one inch in diameter.

*Graphite.* Tiny flakes are disseminated throughout both the fine - and coarse-grained limestone with rich concentrations parallel to the contact zone between the two formations.

*Iron Pyrite.* Rough nodular masses are quite common throughout the coarse-grained calcite. Most of the exposed pyrite has been oxidized to considerable extent and in some instances rusty masses of decomposed material is the only remaining evidence of original pyrite. Very occasionally a crystal showing cubo-octahedral faces may be observed in the freshly broken limestone matrix. The largest actual crystal seen by the writer was 3/16" in diameter.

*Apatite.* Observed very rarely as blue-green crystals up to 1" in length.

*Diopside.* This is an equally interesting mineral found here. The crystals occur up to 3" in length with sharp faces and are partially replaced with muscovite mica. Consequently these represent most interesting pseudomorphs of mica replacing diopside. They are found concentrated along the contact zone between the coarse- and fine-grained calcite. The tourmaline, diopside and pyrite occur in intimate association.

*Muscovite Mica.* As pale green crystal plates intimately associated with diopside and tourmaline. Also replacing the diopside crystals.

*Rutile.* Occurs sparsely as sharp transparent ruby red crystals up to 2mm in length.

*Calcite.* Within the mineralized portion of the vein the calcite occurs in graduating coarseness up to cleavable rhombs 3" to 4" in diameter. The color of the rhombs is mainly white but some of the larger ones have included black streaks which gives to them a marbleized overall effect. These are not too common but when found are most colorful. The mottled black and white color is in striking contrast to the "almost transparent yellowish-white" calcite from Newcomb described by Nason. All of the calcite here is twinned as evidenced by the prominent twinning striae which run diagonally across the rhombohedral faces of the rhombs. The writer has never seen untwinned calcite from any of the many Grenville limestone exposures he has visited throughout the southeastern Adirondacks although it is possible such an occurrence may exist. This factor would certainly indicate that identical physical conditions of crystallization existed at all occurrences of these formations within this area.

**Other nearby mineral exposures**

An outcropping of serpentine is exposed in a field some 300 yards west of the tourmaline exposure. During the early 1900's the exposure was investigated for asbestus and several small exploratory pits were blasted out. The concentration of asbestus fibre was too thinly distributed to warrant further commercial operations and the pits were abandoned. At the present time this area is on private farm land and trespassing in any form is strictly prohibited.

Several miles beyond Brant Lake along Route 8 towards Hague-on-Lake George, is the village of Graphite, at the summit of Hague Mountain. During the late 1800's this area was the scene of bustling activity with several large graphite mines in full scale operation, and a large mill for the separtion of the graphite from the Grenville limestone in which it was contained. Economic conditions, and competition from richer deposits elsewhere forced the abandonment of these operations at this locality. The old shafts are now badly caved in and are extremely dangerous for would-be prospectors.

# The Somabula Forest Diamond Field Southern Rhodesia

M. C. Bandy

The Somabula Forest diamond placers are not of commercial interest but are of scientific interest because of the associated minerals and the primary source of both the diamonds and these minerals.

The "diamond field" lies some 10 miles south and west of Gwelo and extends west and north from Willoughby, a station on the Bulawaya-Gwelo railway. The main gravel deposits are between the Ngamo and Gwelo rivers to the north and the Vungu river to the south. Diamondiferous kimberlite pipes are found ten to forty-five miles south of the placer deposits.

ACKNOWLEDGEMENTS

Much of the information contained in this review has been taken from Bulletin 8 of the Southern Rhodesian Geological Survey published in 1921. Much valuable recent information was given the writer on visits to the area by Mr. H. J. Hollings who has been mining in the field for the past forty years and is the only living authority on the field.

## PRODUCTION

The field has produced approximately 16,000 carats, almost all the production being stones of good to poor gem quality. Less than 200 carats have been won from the kimberlite pipes and sills. The approximate value of the production was £76,600, the average price realized being £4. 16. 0. per carat (1). The highest average price received in any year was £8. 6. 0. per carat in 1919. The present price is approximately £10 per carat ($28.00).

In addition to the diamonds the gravels have produced blue topaz and chrysoberyl of gem quality. Up to 1920, 72, 977 carats or other gem materials had been recovered from the gravels and sold for a total of £8,065. The actual production was probably larger. In 1920 the miners received $0.60 - $0.65 per carat for deep yellow gem chrysoberyl.

## HISTORY

Although the Egyptians and Arabs were active in this area for over 2000 years and there are records of penetration by Portuguese as early as 1545 the chronological history extends back only to 1890. On Sepetmber 12, 1890 the Pioneer Column sent by the British South Africa Company took possession of a large portion of what is now Northern and Southern Rhodesia in the name of Queen Victoria. Soon after the Column and police escort disbanded and began pegging gold claims on old surface workings which were widespread throughout Southern Rhodesia. This initiated intense mining activity and miners began to arrive in increasing numbers from South Africa. This influx of Europeans led inevitably to incidents and subsequent restrictions on the native peoples which culminated in the Matabele War in 1893. This broke the power of the Matabele people in western Southern Rhodesia and at the close of 1893 Bulawayo was occupied and Matabeleland added to the British South Africa Company's territory. Mining activity spread rapidly throughout this territory but was confined to the mining of the richest gold outcrops in the old workings. It is said that every gold mine worked to date in Southern Rhodesia was located orginially on ancient workings.

The oldest mine of importance in the Somabula area is the Shamrock Gold Mine to the north of the Gwelo river where the first crushing plant was put into operation in 1901. The Criterion, the first mine to be registered in the Bulawayo area, in 1893, lies to the south.

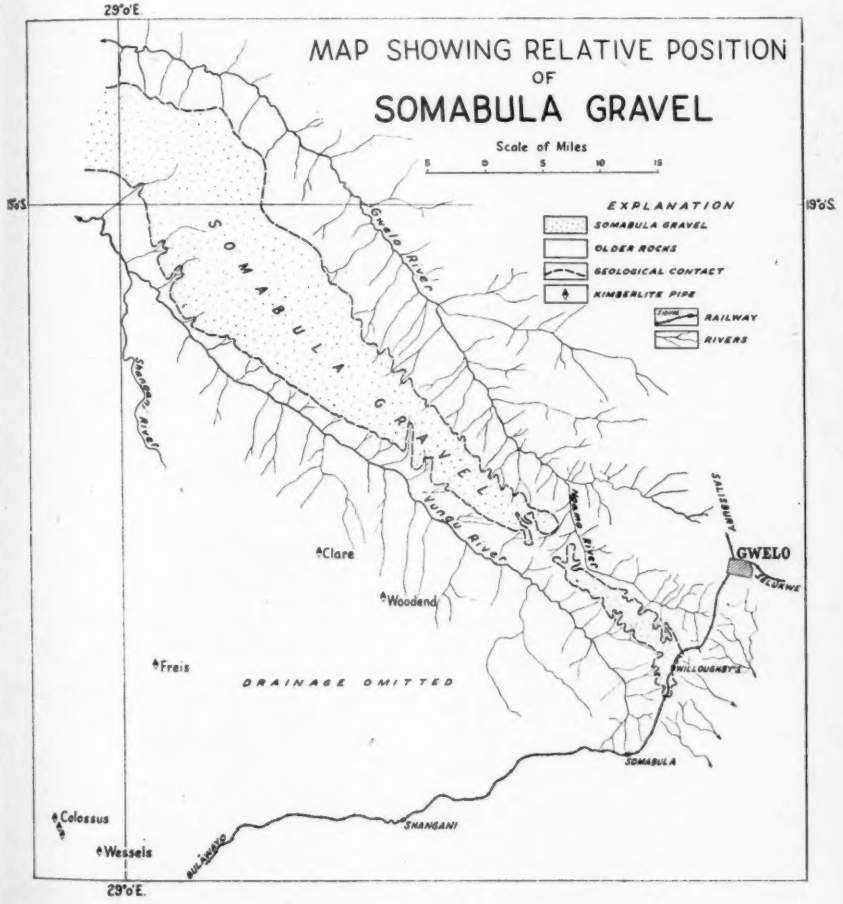
Miners moving north from Bulawayo and testing the river gravels for gold led to the discovery of diamonds on the Somabula Spruit in 1903 by H. R. Moir and his brother. Moir had washed diamonds on the Vaal River and finding "blacks" (staurolite) in his pan carefully prospected the area around the old "Hunter's Road" and found diamonds, chrysoberyl and sapphires. As early as 1892 DeBeers Consolidated Mines had obtained exclusive rights from the British South

Africa Company to work diamondiferous deposits in Rhodesia.

Since Moir was unable to wash for diamonds himself he brought the discovery to the attention of Sir John Willoughby who obtained a concession from DeBeers. Sir John formed Willoughby's Consolidated Company with London capital and his subsidiary operating company, South African Option Sindicate, bought up Moir's rights. Mining started on a large scale in 1905. The operation was a financial failure due in part to the assumption the placer deposits were derived from a nearby pipe and numerous bore holes and shafts were sunk in search for it.

The company produced some 1350, 3535 and 960 carats of diamonds in 1906, 1907 and 1908 with a value of £5,850 £15,320 and £4,152 respectively. In 1908 the company discontinued operations and the ground was thrown open to individual miners.

Some men had staked claims on and near the Ngamo river following Moir's discovery and they, together with new arrivals, took up the richer ground worked by the company.



There was a steady increase in production to 1914 when there were 40 operators in the field. In value of product the best year was 1913 (Table I). Following a sharp drop in production in 1915 due to World War I and as sharp a recovery in 1916 for the same reason, there was a steady decline in production to 1930 when the field became dormant. There was a revival of interest and a minor rush in 1919 when platinoid metals were found in the gravels although not in payable quantities. By 1921 there were only about a dozen diggers left in the field and although there was a revival of interest in 1923-1924 this died out quickly.

Mr. H. J. Hollings took out his first digger's permit in 1915 and is the only miner to continue operating in the area since 1930 when production virtually ceased. He has continued to trace and prospect ancient drainage channels and almost all recent production has come from his workings. Much of his work is laid out with a divining rod, often with a handful of "blacks" in the left hand.

## GEOLOGIC WORK

Early geologists working in the area were not aware of the presence of diamonds. The first mention of the occurrence was by Prof. J. W. Gregory in 1906. He thought the diamonds came from pegmatite veins in the nearby granite. There was considerable speculation in early papers as to the origin

TABLE I

PRECIOUS STONE PRODUCTION

| Year | Value |
|---|---|
| To 1908 | £27,843 |
| 1908 | 3,467 |
| 1911 | 1,054 |
| 1912 | 2,348 |
| 1913 | 7,781 |
| 1914 | 3,985 |
| 1915 | 1,016 |
| 1916 | 5,331 |
| 1917 | 2,991 |
| 1918 | 2,230 |
| 1919 | 3,083 |
| 1920 | 1,917 |
| 1921 | 721 |
| 1922 | 1,643 |
| 1923 | 3,207 |
| 1924 | 3,322 |
| 1925 | 1,152 |
| 1926 | 551 |
| 1927 | 644 |
| 1928 | 285 |
| 1929 | 1,065 |
| 1930 | 58 |
| 1931 | 30 |
| 1934 | 20 |
| 1936 | 70 |
| 1937 | 30 |
| 1949 | 26 |
| 1951 | 200 |
| 1952 | 478 |
| 1953 | 50 |

and source of the diamonds, particularly after Dr. Flett identified the abundant black mineral in the concentrates as staurolite in 1907. In 1914 Wagner concluded the diamonds came from an undiscovered pipe or dike an unknown but considerable distance from the area. This same year Zealley of the Southern Rhodesia Geological Survey mapped the area and made the important observation that the agates from the Karroo basalts do not occur in the lowest diamondiferous gravels, although he considered the series as post-Karroo. In 1920 Maufe of the Geological Survey studied the Miami Mica Field over 200 miles to the north and discovered abundant staurolite, black tourmaline and garnet associated with bervl in occurrences where other minerals associated with the diamonds at Somabula might be expected.

## GENERAL GEOLOGY

The Somabula Forest and the surrounding country is underlain by a vast body of granite. Erosion has denuded the sediments except in the area of the Forest. The granite does not support a vigorous growth of trees as does the sediments hence the geographic name. There are no distinctive geophysical features in the area.

The Forest is limited to a narrow strip one to ten miles wide running northwest from the Bulawayo-Gwelo railway for some seventy miles. It is coincident with the Somabula gravels. To the north these

gravels are cut off by the Gwelo River and its tributary the Ngamo and to the south by the Shangani River and its tributary the Vungu. The bed of all these streams is granite.

## STRUCTURE

The structure of the Forest and surrounding area is simple. There is a drainage divide just east of the Bulawayo-Gwelo railway with drainage to the east having a steeper gradient than to the north and west. The latter drainage flows to the Zambezi River over a gently sloping granite peneplane.

To the north and west the granite passes under the Archean basement schists, the Triassic and Permian Karroo sandstones and basaltic lavas, and the Tertiary Kalahari sand. The dominant granite is a white feldspar-biotite granite with faint gneissic structure due to parallelism of the biotite. There are intrusives of red granite and inliers of basement schists in the vicinity of the forest. Dolerite dikes which are rather common in other parts of Southern Rhodesia are uncommon in this area. Some workers have thought that some of the intrusives in the granite are later than the Somabula beds.

The diamondiferous gravels or series rests on a very uneven surface of the weathered granite. The series consists of fluviatile and estuarine gravels with very well rounded pebbles.

## THE SOMABULA SERIES

Overlying the Somabula Series are thin and scattered areas of recent rubble that contain pebbles of late Karroo basalt, Kalahari silcrete, silicified fossil trees, chalcedony, Kalahari ironstone, and crude stone implements as well as pebbles from the underlying Somabula Series. This surface rubble has been worked for diamonds in a few places along the southeastern limit of the Karroo beds. These workings have been reported as profitable and stones up to 19 carats were found. They represent the residue from denudation of the previously underlying Karroo beds.

The Somabula Series is of Karroo age, probably entirely Upper Karroo. In the area where diamonds have been found the series can be divided into an Upper and Lower group separated by a minor unconformity. As mentioned above the Upper beds are overlain in places by a surface gravel in major part derived from younger beds now eroded away.

The Upper Group (arkose), with a maximum thickness of some 120 feet, is composed of coarse red feldspar and quartz conglomerates and gravels. The basal gravel may carry diamonds but probably only where it is in contact with the basement granite.

The Lower Group, with a maximum thickness of some 60 feet is recognized by the light chocolate red to pink siliceous shales and fine grained sandstones with interbedded gravels, particularly at the base. The siliceous shale is known locally as "pink bar". This is a marker bed or beds with the diamondiferous gravels occuring just beneath. When more than one "pink bar" occurs, and as many as five have been reported, the gravels beneath each may carry diamonds.

In general, the diamonds are found in the old drainage channels. Where the old stream beds contained large granite boulders pockets of diamonds have been found. It was reported that the basal gravel beds of the Upper Group contained abundant "blacks" and more of the other gem minerals but fewer diamonds than the gravels of the Lower Groups.

## KIMBERLITE

Kimberlite occurs filling fissures and pipes to the south of Somabula Forest. The occurrences appear to follow a northeasterly direction for some thirty-five miles. Only one, the Wessels sill outcrops, the rest having been covered with a heavy overburden and thick bush. They were all found by prospectors who showed great skill in following up the indicators, ilmenite and garnet, in both the streams and soil. Only two have been proven to contain diamonds of good quality, the Wessels sill and the Colossus pipe. Mr. Hollings reports that although the Wessels sill yielded stones of good quality up to six carats in size neither occurrence was of economic grade at the time they were worked although the Wessels sill

might prove to be an economic venture if worked today. Near the surface all the kimberlite weathers to the characteristic yellow ground. The unweathered rock is a typical kimberlite.

## DIAMONDS AND ASSOCIATED MINERALS IN CONCENTRATES

The Somabula diamond occurrence is of particular interest because of the unique variety of minerals in the gravels. Undoubtedly other and equally interesting minerals occur that are not recovered in the concentrates. It is unfortunate that a mineralogical study of the gravels has never been made.

*Andalusite* is an uncommon mineral that occurs in transparent to opaque grains. When present it is usually colorless to rose-pink depending upon the direction in which it is viewed. It probably comes from the basement schists although comparable material has never been found to date in Rhodesia.

*"Beans"*, so called, are a hydrous phosphate of aluminum and cerium. A partial analysis by Mr. E. Edwards of the Mines Office, Salisbury, and reported in Bulletin No. 8, showed the following partial composition,-

| | |
|---|---|
| $SiO_2$ | 3.24% |
| $Al_2O_3$ | 53.46% |
| $Ce_2O_3$ | 9.00% |
| $P_2O_5$ | 19.50% |

The mineral contains little or no thoria; has a specific gravity of 3.1 - 3.2; hardness, 6; conchoidal fracture; refractive index, 1.63. It occurs in polished flattened brown to gray and white pebbles that are not unlike beans in appearance. They may be related to georceixite and ferrazite found in the diamond gravels of Brazil and there called "favas" or beans.

*Beryl* is a rare-mineral in the concentrates but may be relatively common in the gravels since its low specific gravity would preclude it from association with the heavy minerals. It occurs in transparent to opaque pebbles, the former of a pale aquamarine color. Beryl is common in pegmatites throughout Rhodesia.

*Chalcedony* is rare in the concentrates probably because of its low specific gravity. It has been noted in the form of agate of a light color which is quite different from the agate in the surface rubble. The latter is often in large pebbles and is assumed to have come from basalts now eroded away. Chalcedony is common in the Great Dike which lies to the east and north of Somabula while agate is common to unusual throughout Rhodesia.

Rarely small pebbles of jasper are found. Large subangular pebbles of banded jasper and ironstone are common in the surface rubble and Upper Somabula Group.

*Chromite* is uncommon in the concentrates but is more plentiful in the fine sand associated with the diamond. Chromite is common in the Great Dike to the east and north of Somabula.

*Chrysoberyl* is the commonest of the gem stones in the concentrates. The well rounded pebbles showing etched surfaces are usually too small and of too light color to be cut as gems although fine golden yellow and greenish stones are found. Alexandrite has been reported but is very rare while cat's-eye stones are more common. In 1920 Maufe suggested that chrysoberyl might occur in the Miami district and in recent years it has been found in relatively large quantities, one pegmatite having produced some 300 pounds of crystals that were sold for their beryllium content.

*Corundum* is found as gray opaque, ruby, sapphire, colorless, and greenish pebbles. Although sapphires have been reported up to one-half inch in size the form is usually thin and elongated. Crystals of good form up to one-eighth-inch in length are not uncommon. The pebbles are rarely deep colored or uniform in color. Rubies are less common than sapphires and almost never deep or uniform in color. Green corundum of an unattractive color is more common than ruby.

*Diamond*. The characteristic feature of the Somabula diamonds is the green tint found in so many of the stones. This is of particular interest in view of the production in recent years of green diamonds

by radiation. Like some of the latter the color appears to be only skin deep and is lost in cutting. Rarely the stones are yellow and smoky brown grading into industrial stones. It is generally held that the green color in the diamonds deveolped after they were deposited in the gravels and it is generally accepted locally that the color is related to the matrix with colorless stones occurring in one pocket, yellow stones in another and brownish stones in another. It could not be established that the green stones are associated with concentrations of "beans".

The common form is the octahedron with or without growth forms. Modifying forms are the trisoctahedron. Dodecahedron crystals as well as octahedrons with curved faces are common. Crystals with frosted faces are considered to be characteristic and irregular flattened grains are not uncommon.

According to the old records the largest crystal of good quality weighted 36¼ carats and bort up to 50 carats was reported. The average size of the stones from the field is probably under ¾ carat but this is a function of the screen mesh used. It is generally believed that small stones do not occur but this is probably because of the difficulty of recovering them. In general the stones from the Upper Group were of smaller average size than those from the Lower Group.

*Feldspar* in the form of colorless transparent cleavages of adularia are a feature of the gravels. These may be more common than reported since they have the same appearance as much of the quartz.

*Garnet* occurs in various shades of purple, red, pink, and amber. The darker garnets sometimes have the form of a poorly developed rhomb, probably due to cleavage. The amber colored stones are characteristically well rounded and polished while the pink stones may be idiomorphic with only a lightly frosted surface.

The darker stones are probably almandine and the red stones pyrope similar to those found in the kimberlite. The pink stones are believed to have come from pegmatites.

*Gold* is frequently found in the concentrates as nuggets or in vein-quartz pebbles since gold occurs in quartz veins in the basement and younger rocks throughout the area the occurrence in the gravels is to be expected, in fact it is suprising gold is not present in greater quantities. Nuggets up to one-quarter inch and larger are not uncommon. Assays indicate the gravels in some areas carry 0.25-0.50 dwt. per ton. All fine gold is lost in the diamond recovery plant.

*Ilmenite.* It is suprising that ilmenite is almost unknown in the concentrates since it is generally associated with diamonds elsewhere. Ilmenite is abundant in the kimberlite to the south of Somabula and its scarcity in the gravels points to a primary source for the diamonds elsewhere than these intrusives.

*Kyanite* is a very common mineral occuring in elongated plates. It is easily identified and although a light mineral it appears to stay with the heavy minerals because of its shape. Kyanite is abundant in the Miami district 200 miles to the north.

*Limonite* occurs as small concretions and is reported to increase in quantity to the west, that is, upstream in reference to the old drainage pattern.

*Mica.* Although mica is observed throughout the Somabula beds, due to its low specific gravity and thin platy form it is an erratic and uncommon mineral in the concentrates.

*Osmiridium and Platinum.* Since platinum is found in commercial quantities in the Great Dike of Rhodesia it would be expected in the Somabula gravels and concentrates since they are of a younger age. Concentrates from the bottom of the rotary pans were collected by Zealley in 1918 and he reported 3 ounces 12 dwt. of platinum and 7 ounces of osmiridium per ton of concentrates. When this information was published it caused considerable excitement and a short-lived mining boom. Later tests on the ordinary concentrates from the pans indicated that Zealley may have further concentrated the special concentrates from the bottom of the pans. There is no consistent relationship between occurrence of gold and the platinum group metals.

*Quartz.* A characteristic feature of the gravels and concentrates is the presence of well rounded pebbles of transparent colorless quartz. An interesting variety is salmon pink in color. This particular color of quartz is common in the veins and pegmatites of the Miami district. Subangular pebbles or crystals are not uncommon and almost perfect crystals are sometimes found.

*Rutile* occurs not uncommonly as crystals and fragments and rounded grains and pebbles. It is found in many parts of Rhodesia but the only deposit that has been pegged and prospected is in the Miami district.

*Staurolite* is the characteristic mineral of the Somabula concentrates and gravels. Known locally as "blacks" it is accepted as the "indicator" of diamonds. The pebbles are well rounded and range in size from fine sand to one inch gravel. Crystals are almost unknown and even these are well rounded and worn. Staurolite makes up approximately 95 percent of the diamond concentrates. It is abundant in large crystals at Miami.

*Topaz* occurs in colorless to fine light blue pebbles. The latter are known as "Somabula Blues" and beautiful gems have been cut from the larger pebbles. It is reported that Sir John Willoughby presented Queen Alexandra with a superb necklace set with fine Somabula blues and this is now among the Royal Jewels. The colorless pebbles have the same frosted surface as quartz and only experienced men can distinguish them apart. Although opaque topaz is common in the pegmatites of Rhodesia transparent topaz is rare to unknown, either colorless or blue.

*Tourmaline* as black satiny pebbles is common in the concentrates. Fairly sharp crystals are not uncommon. Transparent colored pebbles are known, the most common color being some shade of pink or red and it is said they are always present as rounded pebbles. Aggregates of black needles (schorl) as well as green needles are found occassionally. Black tourmaline, sometimes in giant crystals, is common at Miami and elsewhere in Rhodesia. Pink tourmaline is rare indeed.

*Zircon* in light brownish, rounded crystals is a rare constituent of the concentrates.

It is interesting to note that of the five minerals common in diamond concentrates from primary deposits, garnet, ilmenite, zircon, enstatite, and diopside, only the first is relatively common in the Somabula concentrates, the second and third are rare to very uncommon and the last two have never been observed. This serves to point up the unique character of the occurrence.

## AGE AND ORIGIN OF THE DIAMOND DEPOSIT

The diamonds were deposited in the early or middle Karroo period. There can be little question but that they were carried down to the Somabula Forest by streams flowing south from the area of the present Zambezi Valley and from even farther north. There may have been mingling of material from areas to the north and east of Somabula and even east of Salisbury.

All evidence points to the minerals associated with the diamonds having come from the north, particularly from the Miami District, yet no primary diamond source is known in Rhodesia in this direction. On the other hand a few miles to the south there are a number of diamondiferous dikes and pipes and it is difficult to entirely eliminate them as a possible source. The spatial relationship of the two occurrences of diamonds is unique if the placer stones have come hundreds of miles from an unknown source and been deposited within a few miles of a known primary source.

Possibly they have come from the same primary source as the diamonds in Angola, the Belgian and French Congo and may have been redeposited through erosion of early Karroo gravels. The occurence offers a fascinating problem to a geologic or mineralogic detective.

## MINING

In general the diamonds are recovered from the gravels that lie one to two feet or more above the granite floor. This gravel is won in open cast pits where the overburden is not more than 20 feet deep and from drift and pillar workings at the bottom of vertical shafts where the overburden is deep. Presently Mr. Hollings is removing the overburden from an area formerly mined from shafts and working the pillars that were left.

In open casts the overburden and pay gravel is hauled up inclines in wheel barrows or in cars with winches. Hand winches are used to remove the pay gravel and a minimum of waste in shafts. In the early days oxen were used to haul the cars up inclines from open workings. It has been a common practice to run adits from the face of the larger open cuts where the overburden became excessive.

## MILLING

The milling is as primitive and effective as the mining. If the gravel contains little clay it can be treated as removed but where the clay content is high it must be dried and then broken down by hand with wooden mallets. Boulders are removed by hand and the gravel passed over hand shaken screens with a 5/8th inch opening. The undersized then passes to a screen with a 1/8 inch opening. The oversized from the 5/8 inch screen is discarded. The undersize from the 1/8th inch screen is discarded. Only the minus 5/8th inch, plus 1/8th inch material is treated. It is fed by hand into standard hand-operated diamond pans four to six feet in diameter. As a rule there is sufficient clay in the gravel to form a type of mud-laden fluid in the pan which aids gravity separation. When the gravel is sandy a mud emulsion is added to the pan. At regular intervals the concentrate is drawn off from the outer edge of the pan through trap doors into a bucket. This concentrate is then sieved in water on a 1/8th inch round hand screen to remove fine material. The material remaining on the screen is then poured onto a table for hand sorting, first wet and later dry.

The advantage of this milling system is that it requires a minimum of water; the disadvantage is the loss of fine gold, platinum and platinoid metals and small diamonds.

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## European Museums Visited by Subscriber!

Editor R&M:

When the March-April R&M arrived, we were just getting ready to leave on a full month's tour of the continent. We had a perfectly wonderful trip and visited ten countries. Even though we only had four weeks leave time, we saw just about everything we had planned on. We didn't have time for any mineral collecting, but we tried to see all the mineral museums along the way.

We visited the interesting geological museum in Oslo, Norway, where we were given a special tour around by one of the assistant curators.

In Stockholm, Sweden, we were overwhelmed with the kind attention we received at the Natural History Museum outside the city in Frescati. Professor Wickman made us most welcome and showed us through the fine mineralogical museum. Everything was handsomely displayed and made much more interesting to us by Professor Wickman's guiding. We'll not forget our hour and a half spent there and were most flattered when we were asked to sign the guest book which contains the names of many famous mineralogists including the signature of the King of Sweden who, it turns out, is an avid collector.

Later on in our trip we visited the smaller mineralogical section in the Natural History Museum in Bern, Switzerland. Here, again, everything was beautifully displayed and lighted.

The geological museum in Paris, France, was quite another story! A more dismal tomb of a place, I've never seen. It wasn't a question of how good the lighting was—there just wasn't any! I imagine they have some lovely specimens, but we didn't go equipped with matches.

We certainly had a marvellous month and a few days after we arrived back in England, Daddy and Mom flew over (from Lynn, Mass.) to be with us for four grand weeks. Needless to say we rushed them around trying to show them all of England in that time. We said goodbye to them last Saturday, wondering where the time had gone.


Patricia Berry Barker
2 Park Road
Diss, Norfolk, England


July 4, 1955

# OUR ROCK COLLECTING VACATION

**By James Smedley**
Box 242, Follansbee, W. Va.

My wife, three children and I, departed on the 23rd of June, 1955, for a vacation of sightseeing. Yes and by all means to collect rocks and minerals.

I had some Franklin, N. J., minerals along that I planned to trade on the way. We drove south from my home to Kentucky where we traveled west on Route 62 to Marion, Kentucky, where on the 24th I planned to stay and visit with Ben Clement. Just as we arrived in front of his home it started to hail. This was the worst hail storm that we ever saw. After about half an hour of waiting we drove up the driveway to Ben's home. I introducted myself and family and he invited us to see his collection.

Here is a fellow that really has a fluorite collection and also tops in other minerals that you will find anywhere. If you ever go through Kentucky and don't stop in to visit with Ben and his family and see his collection you are missing the best part of your trip. I bought some swell specimens of fluorite, blue barite, witherite and a lot of other specimens from him. We sure spent an enjoyable evening with the Clements.

We stayed in a motel that evening and the next morning, June 25, we drove north to Cave in Rock, Illinois. On the way we came upon an old wash trough that was used to clean dirt from fluorite. Here we picked up some fine specimens that were quite fluorescent.

We drove north of Cave in Rock about 4 miles then turned left another two miles and came upon several old mines that were abandoned. Here we found some good yellow fluorite with calcite specimens. We then drove north to Peoria to meet H. E. Chelf, with whom I have been corresponding. We arrived at his home about 7:00 P.M. We made several trades and after a pleasant evening with the Chelf's we started west. He directed me to the geode beds in Iowa.

We drove most of the night and the next morning June 26 we arrived in Burlington, Iowa. We drove west from there on Route 34 to Middletown. At the west end of town we turned off on a gravel road that leads to Geode Park and to the dam. We took the road leading to the dam, drove across a cement bridge and turned right until we came unto a steel bridge. There along a clay bank near the stream is where we located the geodes. My children played in the stream while I dug for geodes. I found some with chalcedony, geothite crystals and quartz crystals, witherite on quartz crystals, limonite and calcite on quartz crystals.

We had all the geodes that space would allow in the car and we drove back up to Route 34 and went west to Chariton, Iowa to visit my Aunt and Uncle Mr. and Mrs. L. C. Britt, getting there just in time for a swell chicken dinner.

On June 27 we drove down to Melrose, Iowa, to see Michael Papcun, whose article appeared in ROCKS AND MINERALS, May-June 1955, p. 257.

The large pieces he wrote about are the best specimens I have ever seen. The one that has the smoky quartz crystals is really beautiful. We made several trades and I obtained some of his better smaller specimens, also some good petrified lepidodendron, which he has quite a bit of, and also petrified wood. We enjoyed the day with him and his family and enjoyed also seeing his collection.

On June 28 we motored with my Aunt and Uncle to Peru, Iowa, to see another collector, Amel Priest. He has a swell collection and has the tops in fossils. He has a good collection of rocks and minerals. He, my son and I went on a rock hunting trip the following day. We drove north on Route 14 from Chariton to Knoxville, Iowa, about 25 miles. Then left on Route 92 for 9 more miles until we came upon a sign reading Pershing Coal Co. then on a gravel road south 2 miles. Here you can see the spoil banks, where coal was stripped. We arrived there just as it began to pour down rain. This kind of weather doesn't stop rock hounds so out of the car we went. We picked

large amounts of marcasite that were really good specimens. We were soak and wet and decided to drive east on 92 to a small town named Tracy. Here we ate lunch and the rain soon stopped. We were now hunting selenite crystals. We drove part way through Tracy, then right at the lumber yard to the first road to the left. Down this road for two miles the road was marked "Road Closed". Here we walked a short distance to a limestone quarry. In the black dirt around the quarry we picked up quite a few good crystals—some as large as 6 inches. It got quite warm in the afternoon and we were getting tired so we drove back to my Aunt and Uncle's home arriving around 3:30 P.M.—from there Mr. Priest went on home.

On June 30 we were on our way to Colorado. We stopped off at Hastings, Nebraska, to visit its Museum where we donated some minerals from Franklin, New Jersey and Clay Center, Ohio.

On July 1 we motored to Colorado Springs, Colo., then down to Florence where we stopped at Eckert Mineral Research and traded for microcline, pyrite, satin malachite, azurite, wulfenite, and some others. The trade I enjoyed the most was receiving a piece of native silver weighting 8½ ounces from Coba't, Ontario. Mr. Eckert said he obtained it from Dr. Frederick H. Pough, the author of "A field Guide to Rocks and Minerals." We then drove over the Royal Gorge to Canon City and north to Buena Vista—where we bedded down for the night in a motel.

The next morning, July 2, I took a hike across the road from the motel and picked up several pieces of petrified wood and a piece of lepidodendron that was the same as we obtained in Iowa. After breakfast we motord to Cripple Creek. On the way we drove off the highway on a dirt road and came upon a fellow digging for uranium and we spent about an hour talking to him. He had a Geiger counter and demonstrated it to us and showed us the different sound effects over different parts of the ground.

We left him and his dog with the understanding that if he should have a good strike he would write me.

A few miles down the road I saw an old abandoned mine tunnel and began to investigate. It was a zinc ore mine going in about ¼ a mile. About 200 yards from the entrance there were large pieces of ice. Quite unusual because the weather outside was in the 90's.

At Cripple Creek we obtained some very fine gold ore specimens. On July 3 we were on our way home with all the rocks and minerals we could bring back. We arrived home on July 8 very happy to have obtained new specimens for my collection and making new friends. This made possible by my hobby of collecting rocks and minerals and by the magazine of the same name.

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**It's the real thing!**

Editor R&M:

Excuse me but I must get this money off at once for a renewal of my subscription. Just don't want to miss a single copy of R&M. If I did it would be too long to wait 2 months for the next issue. R&M is the real thing for us rock hounds and especially for mineral collectors.

Arthur W. Powell
R 1, N. Dixie Hwy.
Findlay, Ohio

July 25, 1955.

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## FIELD TRIP

**Francis E. Schiller**
**Luke, Md.**

Get your hammer and your knapsack,
Put a sandwich in your pocket,
We are off to look for minerals
In the quarries and the hills.
No, you do not need a textbook
Or a miner's vast experience . . .
Merely bring an eye for beauty
And a love for Nature's thrills.

All the garnets in the ledges;
All the pretty, clear quartz crystals;
All the tourmalines and feldspars;
All the micas . . . and the rest . . .
Do not care for gilt diplomas,
They but wish for recognition;
On a shelf in your collection
They will be content to rest.

Rocks and stones are often pretty;
And are vain about their beauty . . .
They don't like to lie on hillsides
Undisclosed to eye of man,
They keep saying, "Come to Newry,
Come to Greenwood and Mt. Mica,
Come to Franklin and to Kingston,
Come and find us . . . if you can."

# PROSPECTING IN 1954

By John R. Dillingham
Naples, Maine

During the prospecting season of 1954 we went on many Rock-hunting trips, and by chance, met and enjoyed the company of a large part of our mineral minded friends.

### April

In April we called on the Tamminens in Greenwood, Maine, and visited their popular mine. From there we obtained: pink caesium beryl, amblygonite xls, pseudo cubic quartz xls, and various lithium minerals.

Another trip we went to Pitt's garnet location in Minot, Maine, and found worthwhile cinnamon garnets. Waded through the snow to look at Mt. Mica in Paris, Maine.

Phil Morrill led us to Hoopers Ledge which yields large thick masses of chrysoberyl. It started raining as we arrived, so we soon turned back. Found a small piece of chrysoberyl on the surface of the mine road. More about Hoopers Ledge later. Visited mines in Albany, Maine, during the month but except for a few minor beryl xls, nothing worthwhile came to us!

### May

In May we were really hitting our stride and going places, namely; Stark N. H. three trips, only one which turned up amethyst. The first trip was led by Frank Leggett, Charles Weeks, and Charles Marble. Others along were Burnham Weeks, Jim Faulkner, Bob Davis, Bob's son, and yours truly. Other trips to Stark were made by Don Ricker, Phil Morrill, Ralph DeCosta, and myself. This is a long hard trip, the last few hundred yards a scramble over large boulders and scaling ledges.

Herb Kimball located some stray amethyst on Deer Hill in Stow, Maine. Five of us worked the zone and we were rewarded with pale amethyst xls; and finally a pocket of tabular pale smoky quartz xls. Some of these has streaks of amethyst. No gem material but good specimens none the less.

Got to the Rice Mine in N. Groton, N. H. Here we had a series of thunder showers throughout the day and Kimball and I were never wetter. By the time we got back to the car our clothes had reached the saturation point, as much water ran from us as fell. The ¾" x 2" gemmy golden beryl xl compensated for the wetting. Have dried out since and still have the xl.

Memorial weekend with Mrs. Dillingham started for Perry, Me. In Nov. had made a date with the Hinckleys to meet there. This was my third trip to Perry so had a fair idea where to look for the different minerals. A small geode, carnelian, agates, calcite nodules, calcite conglomerate, (fluorescent), flint, jaspers, prehnite etc. loaded our car to the "water line", Oh yes the objective mineral, saponite, was pointed out to us by the Hinckleys.

On the homeward trip stopped at Camden beach, Camden, Maine, and found andalusite xls, chiastolites (very poor), epidote, a black tourmaline "sunburst", and fossil imprints of shells, in shale.

### June

June went to Ragged Jack Mt. in Hartford, Me., two trips, with Lional Bartlett and Herb Kimball. Nice specimens of chrysoberyl, green apatites in matrix 3" in length, (thought at first they were tourmalines) and a short terminated black tourmaline 2 inches in diameter.

Went to Perham's B & B Mica Mine, North Norway, Maine, the first of several trips. From there we got purpurite, small purplish garnets in matrix, spodumene and fluorescent apatite. Not far from there we found a misshapen calcite monstrosity, weighting 52 lbs. that we have named "The Thing".

Found at the Andrews Mine, an old workings, on Speckled Mt. in Stoneham, Me., a few poor specimens of beryl. On way out visited the old workings on Sugarloaf Mt., Maine; a nice matrix specimen of golden beryl from there though not gemmy.

**July**

Got back to Hoopers Ledge again, with Bartlett and Kimball. After digging several test holes in the dump finally turned up a snake. As he did not resemble any specimens I was after, moved again, attacking the road fill this time. Within two minutes was in pay dirt. The wheel-rut had been filled with mine tailings and what once had been a massive chrysoberyl specimen was now shattered. I gathered twelve pounds of parts all together, a 5 lb. chunk and one weighing 3 lbs., with the rest being in smaller parts.

Another trip to Deer Hill, Stow, Maine but succeeded only in accumulating a few xls from our former diggings.

A thunder storm turned us home after only a few minutes at the Windham, Maine, Staurolite location.

A trip to Diamond Ledge in Greenwood, Maine, with the usual quartz xls found.

**August**

A fiasco of hunting a garnet location in West Bethel, Maine.

Our luck still held good. For several years we had tried to find good chiastolites. On a trip near Rangley, Maine, we found chiastolites that were on a par with those found at Camden, Maine. Trying again some miles south of that spot we found the kind and quality we were seeking. A mica schist was "rodded and ribbed" with the cigar shaped protrubances. Some eight or nine inches long by an inch in diameter. They slice and polish nicely and whether the cross is formed by carbon impurities or not, we don't care, to us they are tops.

A Sunday trip to Mt. Apatite, Auburn, Me., the best specimen obtained a matrix beryl. Visited Redstone Quarry in N. H. for a short time, no luck.

Spent a day at the Neville Quarry at Newry, Me. Brought home a bag of the "despised" black tourmaline from the dump. Found that many are brown on thin edges against an electric light or flashlight.

**September**

Sept. 5th, found us on another Newry trip, this time with Hinckleys and Kimballs. Several other Rockhounds were there also. Saw a few large bi-colored tourmalines Charlie Bragg had dug out, but they were shattered and quite friable. Our crowd was rather out of the luck zone, a nice piece of gemmy kunzite being the best we could find.

The next day being Labor Day, Kimball and I went to the Old Uncle Tom Mine in Greenwood, Me. This is approached from the southern slope of the Mt. and is not one of the several openings that are on the top of the Mt. Some nice caesium beryl has come from this mine but there was none for us that day. A rather nice specimen of pollucite and several well shaped amblygonite xls were all that Lady Luck would allow us.

Rumors of McAllister's topaz find at Lovejoy's Pit near Conway, N. H., caused us to look the place over. Among those we found there were Stan Perham and family, and the Tamminens. Moved quite a parcel of earth but saw nothing outstanding that any one found that day.

The 19th went with the Kimballs to one of the mine openings in the North Groton, N. H., area. Not many Rockhounds had visited this place but Phil Morrill and Ernie Smith led us to the rainbow's end. The minerals we found were really worth while and filled in several blank places in our mineral list. They included vivid blue lazulite xls with scorzalite also dufrenite and whitlockite. Our hopes were high and we were not disappointed for the objective mineral was brazilianite xls. Everyone was able to get this rare prize, and not xls that had to be magnified several times to see, but xls that were ¾" x ½" on the base. There are but few places in the world where brazilianite has been found so we were jubilant to get ours. The 26th we went out with our Maine Mineralogical & Geological Society as trip leader for the day. We visited the Greenwood area. Perham's, B & B Mica Mine was our first stop. About 35 members culled the dumps and inspected the mine. Mr. and Mrs. Perham had graciously given permission and were present; after a couple hours we moved on to the Tamminen quarry about a mile from there. A few nice specimens

were accumulated and everyone got something that appealed to him.

**October**

The first Sunday in October, along with Kimball and Morrill, we explored the dumps of the Old Hedgehog Hill mica mine in Peru, Me. The mineral in quantity there is the red iron garnet. These are quite plentiful and range in size up to 1½" in the diameter, many are clusters mixed with mica. Some few in quartz are translucent, well shaped but not gem quality.

The 10th of October with the family went again to Lovejoys, Conway, N. H. Part of the Boston Mineral Club were there as well as some of our Maine and New Hampshire friends. At one time 35 rockhounds were in sight. Picks, shovels and diggers of many sorts moved debris and rocks, yet I saw very little of consequence found. The pleasure of chatting with old friends and new, only prevented the day from being a total loss.

After lunch on the 17th we started for the Silver Lake Lead Mine in Madison, N. H. Considering the late start and having to inquire several times, were fortunate that we could practically drive into the mine. This was an extensive operation in its day, with even a smelting plant on the grounds. The concrete and brick foundation is all that is left of the plant as fire destroyed the buildings some years ago. Galena and sphalerite are abundant and as usual we brought home plenty.

On the 24th we had a date with Carpenters of Limerick, Me., to go to Sugarloaf Mt. in Stoneham, Me. We dug diligently for beryllonite but couldn't find (or distinguish) any. A couple nice specimens of columbite was all we found. In another dump near there Forrest Carpenter unearthed the find of the day, a gemmy green beryl approx. ¾" x 3" in quartz matrix. As the Dr. remarked "It was a doozy", although we found other beryls none compared with Forrest's.

The next Sunday the 31st we visited the Carpenters prospecting realm. Berrys Ledge in Cornish, Me., was our first stop. We had been there several times before, but what rockhound with an empty space in his pack can leave minerals lying around? We collected diopside, vesuvianite, cinnamon garnet, and zoisite. The latter was the objective mineral, as it filled in a blank on our list. This was our second trip to Berrys Ledge, as we had been there at night with the short wave mineral light for scheelite in July. After lunch we set out for Wakefield, N. H. In an old feldspar quarry Forrest located a beryl deposit. We had found beryl many times before but not in such quantity. From the shattered walls we could and did pry out xls from pencil size to eight inches in diameter. From an area 3 feet by 3 feet so many xls turned out we had to make two trips to the car to carry it all, and there were eight of us. This particular beryl though not gemmy is of an intriguing color, a powder blue. The Carpenters have cabs made from it, ear drops pendants, etc. and it makes a very pretty ornament.

**November**

On a rainy afternoon before the first Sunday in Nov. I splashed my way to Lord's Hill in Stoneham, Me., although we had been there many times, had failed to find phenacite. This time knowing what to look for and best of all (thanks to Kimball) just where to look, I chucked every quartz xl that showed into the knapsack without looking it over. The rain was really coming down and only a rockhound would have ben out in it. At home examined each xl thoroughly and fianlly, on one distorted, iron discolored, smoky xl there they were, eight or ten of the vertically striated phenacites. They are small and have to be viewed with a glass, but they're there just the same.

The next three Sundays we spent at Lovejoys, Conway, N. H. (see above) Topaz pockets eluded us, but did get one small topaz xl from some luckier prospector's debris. Some nice clusters of feldspar and smoky quartz xls in tailings, caused us to look more thoroughly. Some of these clusters contain amazonstone xls. and some massive amazonstone was found by us also. Have yet to hear reports of the green microcline being found at this

locality before, tho it is probable that others have. Some of the feldspar xls are coated with a glistening albite that gives them a pearly appearance.

We did stumble on a pocket containing about a bushel of smoky quartz and feldspar xls. From this lot culled out thirty or more good specimens. The feldspar xls are in every conceivable position with black quartz xls standing at attention among them. There is a green gray coating, of kaolin, on them that penetrates the quartz. It is impossible to remove this coating but it seems to add to their attractiveness. The coating does not conceal the xls' shape but covers them in the manner that the first snow hides objects without changing their familiar contour.

The last Sunday in Nov. snow turned us back from Lovejoys, Conway, N. H., so made a quick trip to Lord Hill, Stoneham, Me. again. Snow there, but the southern slopes of dump were bare. Another smoky with phenacites, but not to be compared with the one found a few weeks before.

**December**

December is usually "off the limits" so far as mineral hunting in Maine is concerned but several heavy rains had dissolved the thin cover of snow and we made the most of it. The Dec. days are short, but so is the distance in miles to Pitts Quarry in Minot, Maine.

Recent blasting had dislodged many clusters of cinnamon garnets. We collected several fair specimens but perhaps the prize is a freak. Mrs. Dillingham calls it her "Albino Garnet". It is approximately 2" x 1½" and is of garnet shape. Its composition appears to be of calcite with flecks of cinnamon garnet thru it. These flecks are not xls, but appear to be slivers of garnet. Another specimen has several small xls of smoky quartz that appear to be of the shape of garnet.

During the year we went on fifty-seven trips and visited thirty-two places. We acquired eleven minerals that we hadn't found before and added forty or more new specimens to our shelves. We are looking to the new year (1955) in anticipation of meeting good friends, new friends, good finds, and hope good luck.

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**An invitation from Alaska!**

Editor R&M:

I had a very pleasant surprise about two weeks ago. The Shulmans, Gerry and Will of Newark, N. J., dropped in for a visit. At the time our water supply was low so we were not sluicing but I think they enjoyed this short stay, looking over the different formations and my mineral collection.

They have a rugged trail ahead of them. It is about 600 miles from here, over the Dawson trail, crossing the Yukon River twice by ferry, before they will reach Whitehorse. Then they will be back on the Alaskan Highway again.

It is well that they came through when they did because since then we have had nothing but hail, rain or snow.

Chicken, Alaska, is located approximately 1100 miles south of the North Pole. My cabin is about the end of the line.

We usually have 4 months of balmy weather but this year summer did not arrive until about June 15th. Since Aug. 15th our sluice boxes have been freezing over with ice so if the weather keeps up this way we will have a mighty short summer. On the other hand the temperature might rise to 65 or 70 degrees and stay there until October.

So if any of your rock hound friends are troubled with the heat, down your way, send them up to Chicken. Tell them to bring plenty of gas along as it's 65¢ a gallon here.

They will be repaid for making a trip up to this North Country because Lost Chicken Canyon, Jack, Wade, Polly and many other creeks are the answer to a rock hound's dream. And also this is one of the finest big game districts in the north—moose, caribou, grizzlies and wolves—yes big black ones.

Geo. Turner
Chicken, Alaska

Aug. 20, 1955.

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**R & M only link!**

Editor R&M:

Enclosed please find $3.00 for the renewal of my subscription. For the past 7 years I have been very interested in the collecting of minerals as a hobby. Since I have joined the Marine Corps, R&M has been my only link with minerals of any kind. I'm especially interested in World News on Mineral Occurrences.

James B. Holmes,
Cpl. USMC
H&S Co. 2nd Am. Trac. Bn.
Camp Lejeune, N. C.

July 26, 1955

# BARITE CRYSTALS IN TREE CASTS

**By Ralph E. Platt**

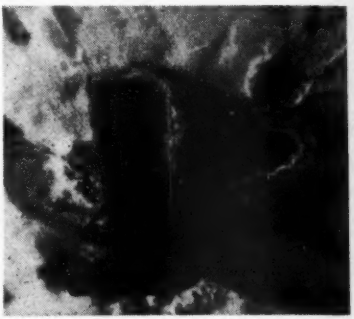
2105 E. Lincoln Way, Cheyenne, Wyo.

These barite crystals are unusual from several standpoints. First their size. the largest weighting 5½ pounds; second, they are clean cut showing good crystals and a nice translucent blue green color. Perhaps their occurrence is the most unusual, since I found them in a hollow tree cast purely by accident.

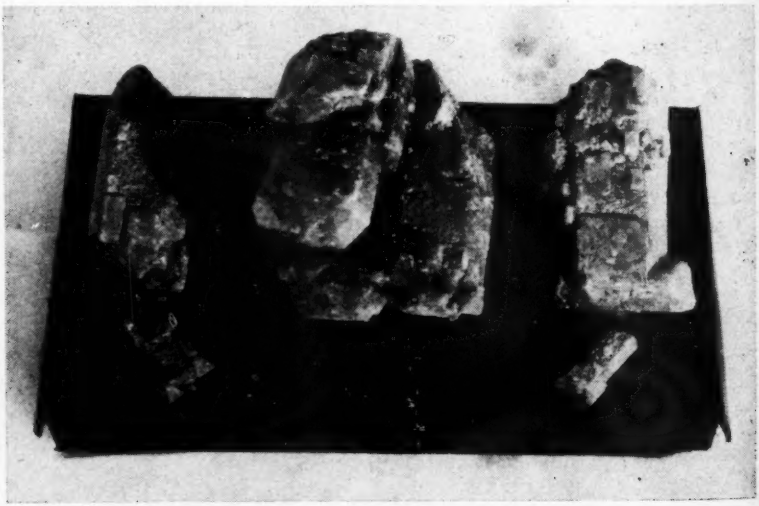
I had been searching for hollow casts, amethyst lined, and not without results for the trip had yielded one beautiful specimen plus another with dog tooth calcite crystals. Seeing a cast imbedded in the volcanic ash high upon a cliff, I set about trying to reach it. After making my way up the cliff some 30 to 40 feet, I discovered a large cast filled up by pack rats with sticks etc. Cleaning it out for a good hold, I picked up something quite heavy. It was very dirty and for a moment I didn't know quite what I had, but I was soon thrilled to find I had a beautiful specimen.

When I finally reached the cast I originally set out after, it turned out to be a dud, but I didn't much care since I had already been well paid for my climb.

The location for the barite xls and the tree casts is on the county line between Fremont and Park Counties, some 50 miles east of the Yellowstone Park boundary line, in Wyoming.



**Hollow tree casts, amethyst lined**



**Barite crystals found in hollow tree cast. Center group weight 5½ lbs. Lower right has an unusual cap while lower left has a small crystal growing from termination.**

# World News on Mineral Occurrences

**Items on new finds are desired. Please send them in.**

**Abbreviations:** xl—crystal xled—crystallized xline—crystalline fl—fluoresces ph—phosphoresces

ALABAMA—Barite occurs near Margerum, Colbert Co., Ala., so we have been informed by William M. Johnson, RFD 6, Knoxville, Tenn.

ARIZONA—"I am sending you under separate cover an interesting specimen. This material is found at the Metate asbestos mine near Globe (Gila Co.), Ariz. Mr. Jack Neal, one of the owners of the mine, states that it occurs in large quantity throughout the mine."—letter dated July 1, 1955, from C. C. Corley, 2534 N. 28th St., Phoenix, Ariz.

The mineral consists of a one inch vein of brown fibrous calcite (pseudo after serpentine asbestos) in a dark gray limestone.

ARKANSAS—The following item was sent in by Byron C. Marshall, 204 Central Ave., Hot Springs National Park, Ark.

"Concretions are often of unusual interest in that they sometimes assume grotesque shapes. I wish to describe briefly two such of rather peculiar designs.

"The first I call the petrified doughnut. It is round and quite smooth, with a hole through the center. It is about seven inches thick, by fourteen inches diameter. The hole starts in at about seven inches on each side in width, and narrows down to about three and one-half inches, half way through its thickness. Some one had broken off just a little from one outer side before I found it. I suppose this was done to see what it looked like on a fresh surface. Anyone can tell that this is fresh work. On the opposite outer side, this object is some rough, but this is old; being smoothed up, and stained by time and weather. This side by a very slight bulge suggests that at some distant time it extended out by a neck, and may have been connected by this neck to a more massive piece. Having seen a great deal of chert in northern Arkansas and southern Missouri, I am well acquainted with the way it often necks out and then expands.

"Chert frequently assumes odd shapes. I have seen them like turtles, crooked roots of trees a tomahawk with handle, horse's hoof, a discoidal, pieces of petrified wood, heads of pixie or gnome, probably with a long nose, goose or other sized eggs, a head of cabbage, fried eggs, round cocoanut, resembling a ham cut into, and other imitations almost without end. This writer has all those mentioned above and a few more. So close are these resemblances often, that the uniformed sometimes really think these are petrified objects.

"Of course I am not just sure how this particular doughnut formed with the hole through center. My first guess would be that when formed originally, the chert formed around a limestone core which later dissolved away. Chert in northern

**"Petrified Doughnut"**
**Found near Smithville, Lawrence Co., Ark.**

Arkansas and southern Missouri, is found embedded in limestone or associated with it, though in many cases the chert is all that remains. My second guess is that water dripping in some far distant cave, finally wore its way through. My third guess would be that water pouring over some falls of long ago, "pot-holed" its way through. Conjectures of course are always interesting, — right or wrong. I found this about sixteen years ago, near Smithville, Lawrence Co., Arkansas. It will weigh about 150 pounds. Light tan color.

"The next object I call the petrified pound cake. It is very symmetrical, round, and very smooth. It is about five and one-half inches thick, being just a little thicker on one side than on the other. It is thirteen and one-half inches in diameter, at its base. It roundly slopes up to a twelve inch diameter on top. The top then is quite flat. It is a light brown color. It is a sandstone, hard enough to be considered a quartzite. It has a striking resemblance to a large cake. It weights about eighty pounds.

"How this formed, of course I am not quite sure. About the only way I can think of, was as a cast with a "pot-hole" for the mold. Probably with a change in the current and probably too at the same time, a change in the water level, sand washed in to fill the pot-hole. Or, the original stream bed could have become dry even, through drouth, or through an elevating of the formation, and sand blown in to fill the pot-hole. Undoubtedly with time, other formations were overlayed, and gradually the weight of overburden compressed the sand into sandstone and then into quartzite, with the infiltration of some originally soluble mixture, which helped cement the sand particles together.

"I purchased this about fifteen years ago from a farm home, about ten miles north of Heber Spring. Cleburne Co., Arkansas. They were using it as a back door step. They had found it locally. Sandstone, is the common formation almost all the way across Arkansas at this parallel from east to west, and includes many counties."

**"Petrified Pound Cake"**
**Found 10 miles north of Heber Springs, Cleburne Co., Ark.**

CALIFORNIA — "In San Bernardino Co., Calif., East of Barstow, I collected some superb small xls of manganite associated with fine psilomelane, pyrolusite, and xls of calcite and its variety manganocalcite."—letter dated July 11, 1955 from Jack Schwartz, 656 S. Hendricks Ave., Los Angeles 22, Calif.

COLORADO—A new mineral, a black uranous silicate, has been found in the La Sal No. 2 mine, Mesa Co., Colo., and named coffinite in honor of Reuben Clare Coffin, a geologist, who has made extensive geologic investigations in southwestern Colorado.

CONNECTICUT — "The Hale and Andrews feldspar quarries near Portland, Conn., are now closed to collectors after being open to the public for 35 years. Some "Collectors" left their cars parked in the road leading to the quarry which stopped the quarry trucks from entering." —Note dated June 25, 1955, from W. J. Elwell, 2 Duck St., Danbury, Conn.

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Nice specimens of bluish-gray platy masses of cyanite have been found in Hampton, Windham Co., Conn., by Wm. H. Robbins, RFD 1, Hampton, Conn.

"I have found much of this in field stones only in Hampton and Pomfret, Conn."—note dated May 23, 1955, from Mr. Robbins.

DELAWARE—Brick clay has been dug in Kent Co., Del., near Dover.

FLORIDA—We have received a light tan dolomitic claystone concretion from Howard B. Graves, Jr., 826 S. Ingraham Ave., Lakeland, Fla.

"Large quantities of these concretions weather out of a soft dolomite which is quarried for agricultural lime at Red Level, Citrus Co., Fla."—on label with specimen.

GEORGIA — We have received a packet of the famous Georgia staurolites (Fairy Crosses) which come from Fannin County, Georgia. There were 25 xls in the packet—all loose with sharp edges, —singles, twins—dark brown in color.

The packet was donated by Georgia's famous dealer—Genuine Gems, P. O. Box 1531-B, Atlanta, Ga.

IDAHO—Clarence Martin, R3, Blackfoot, Idaho, has donated a handsome specimen consisting of pink rhodochrosite and dark brown hubnerite.

"It comes from the Irma mine at Patterson, Lemhi Co., Idaho."—letter dated July 30, 1955, from Mr. Martin.

ILLINOIS—A recent letter from H. E. Chelf, 131 Terrace View Lane, Peoria, Ill., reads:

"Went down to the fluorite district around Rosiclare, (Hardin Co.) Ill. Found 22 more good pieces of fluorite (as they leveled an old dump at Eichorn) along with some more good L. W. calcite-fluorite that has the beautiful orange and yellow fluorescence."

INDIANA—A very nice geode has been received from Walter Reeves, R3, Greencastle, Ind. It is encru ted with minute sparkling rock xls, colorless calcite xls, part of which are coated with white chalcedony.

Specimen comes from a hillside near Rt. 43, 3 miles south of Bloomington, Monroe Co., Ind.

IOWA — The following interesting letter, dated May 1, 1955, comes from Frederick A. Brown, 976-25th St., Des-Moines 12, Iowa.

"A short time ago in a note to you I told you about a find supplemental to that of June 1954 (pub. in R&M, Sept-Oct. 1954, p. 477—"Find 30-foot fern fossil on farm near Knoxville, Iowa).

"Find No. 2 was made in another coal strip mine pit on the Barnett farm, about 5½ miles S. E. of Knoxville, Iowa, which makes it approx. 45 miles from downtown Des Moines.

"The No. 2 specimen, a 4½-foot section, was brought to Des Moines by H. R. Straight of Adel, Iowa, and sliced by Rowatt Cut Stone Company with their 2 inch thick gang saw. One side of each slab was polished and the slabs were distributed to interested parties at production cost. The Central Iowa Mineral Society got 5 slabs to be distributed as follows: The Mineral Society, State Historical Museum, State University at Iowa City, Iowa State College at Ames, and John Barnett (owner of the land on which the fossil tree was found). Members of the Society purchased the remainder of the slabs.

"I was told by the miner working in the pit that one fossil tree uncovered was more than 100 feet in length."

A clipping from the Des Moines Register of Tues., April 19, 1955, was enclosed with Mr. Brown's letter. Part of the clipping reads:

Strip-mining operations 5 miles southeast of Knoxville are unearthing a petrified forest of giant pine-like trees, the biggest fossilized specimens of this type of tree yet found in America.

One of the country's leading paleobotanists, Dr. C. A. Arnold of the University of Michigan, came here Monday to study specimens of the trees which grew in a tropical forest in the area approximately 250 million years ago.

"I do not know of any larger specimens of this kind to have been found in this country and studied by anyone familiar with these trees." Dr. Arnold said.

Examining specimens of the trees which measure almost 5 feet in diameter and up to 125 feet in height before re-

moval in broken sections from the strip mine, Dr. Arnold said:

"I have seen nothing of this size among this sort of specimens previously, although smaller specimens are common."

The fossil specimens have been uncovered in strip-mine operations on the John M. Barnett farm. Last July (1954) the first specimen was uncovered and since that time the coal-digging operations have uncovered a veritable paleobotanist's "gold mine," consisting of many huge petrified trunks or sections of the prehistoric pine which grew in the warm epochs, then fell to the ground to turn into stone through the centuries.

When the discoveries first were made amateur students of fossils identified the petrified forms as a type of fern of the genus lepidodendron. Dr. Arnold said he was certain the formations are not lepidodendrons, although he was not prepared to say definitely what the fossils are.

"These formations," he explained, "have none of the features of the lepidodendron, but they appear more likely to be a tree of the cordaites group."

KANSAS—Aragonite, as small xls in vugs, is found in the Ross quarry near Ottawa, Franklin Co., Kans.

KENTUCKY—Charles Johnson, 307 W. 4th St., Frankfort, Ky., sent us recently a clipping from his local paper relative to uranium ore being found in the Powell Mts., of Powell Co., Ky. The uranium ore was discovered in a rugged mountain section 3 miles north of Stanton, Ky., on the waters of Tharpe Creek.

LOUISIANA — Brownish pebbles of jasper have been found in the terrain around Vinton, Calcasieu Parish, La.

MAINE—The following item dated June 5, 1955, comes from Gunnar Bjareby, 147 Worthington St., Boston 15, Mass.

"While examining some specimens of fairfieldite from Newry (Oxford Co.), Me., collected last summer I found one which has several excellent crystals of amblygonite implanted on the botryoidal groupings of fairfieldite crystals. Quite recently I found one which has a few pseudo-octahedral crystals of wardite. These actually are tetragonal and have striations parallel to the base of the pyramid on all faces. They are whitish or almost colorless and have a brilliant luster. The largest crystal is 8 mm. The matrix is quartz with exsolution cavities after triphylite. Wardite has previously been noted from Fairfield, Amatrice Hill and Lucin in Utah; Montebras, France; and Beryl Mountain in South Acworth, N. H."

MARYLAND — Leroy Leisure, 500 Townsend Ave., Baltimore 25, Md., sends in the following item dated May 9, 1955:

"At Upper Marlboro, Prince Georges Co., Md., there are many specimens to be found of fossil barrow. The location is one block north of the junction of routes 202 and 4. The location is on 202. The barrows were made in the bottom of the Eocene Sea. Later they were filled in with sand and then cemented together with iron oxide. Found at the same location are impressions of rootlets in iron oxide."

MASSACHUSETTS — A deep black striated magnetite xl perched on a pale reddish granite has been donated by John S. Albanese, P. O. Box 221, Union, N.J. This fine specimen comes from Townsend, Middlesex Co., Mass.

"A locality specimen and a good one—from Fred Poestkoke collection."—on label.

MICHIGAN—The following letter, dated July 12, 1955, comes from H. E. Chelf, Terrace View Lane, Peoria, Ill.

"July 39rd to 10th the wife and I were on a trip to the Upper Peninsula of Michigan. The first day out was spent driving to Ishpeming, Mich., through the beautiful farm and dairy country of Illinois and Wisconsin. July 4th and 5th were spent with Mr. Schenk and Mr. Lewis of Republic and Ishpeming, resp. We visited various mines in the neighborhood and collected very nice specular hematite, barite, goethite, and the best pyrolusite I've ever seen. They went wild over the Illinois fluorite and geodes we

gave them. A good time was had by all and another visit will be made again in the future.

"On the 6th we drove to Houghton-Hancock (Mich.) where we put up for the night at the Gateway Motel. In the window of the office I noticed some Pugh quarry (Ohio) calcite and mentioned it to the owner. He was surprised, I knew where they came from then invited me to dig around on an old copper mine dump nearby if we wished. After lunch and with about three hours of daylight left we thought we would pass away some time. We were really surprised at our take, so was he. A rain had loosened up the dump and exposed a section of rock about 50 sq. ft. and we obtained eleven specimens; three of them very excellent groups of native copper.

"Our next day out was a drive to Fort Wilkens and a look for agate. Here in Illinois we get good agate near Bellevue on the Mississippi, but while wading at Sand Pt. (Mich.) I found a nice one about 2 x 3" and the natives as well as the lady at Eagle Harbor Agate Shop (Eagle Harbor, Mich.), went wild over it. It is red and white banded with variation of these colors and a large ¼" eye in the center. I expect to tumble it and place it in my display case."

MINNESOTA—Mrs. John Roder, Rt. 4, Hot Springs, Ark., sent in a few months ago the following item:

"We visited the pipestone quarries at Pipestone (Pipestone Co.), Minn. The Indians are the only ones permitted to get it out. Several have stands near the quarries and work it up into useful articles and souvenirs. The father of the family usually has other work thru the week so the rest of the family can be found working there, from 7-8 yrs. up to Mother. It was interesting and we came back with some finished pieces and some in the rough."

MISSISSIPPI — Brownish pebbles of jasper occur in the terrain around Pearlington, Hancock Co., Miss.

MISSOURI—Joe R. Wormington, Rt. 2, Pierce City, Mo., reports finding some interesting marcasite nodules near Noel, McDonald Co., Mo.

MONTANA—Mrs. Ed. P. Olson, Box 425, Beresford, S. D., reports finding nice agates and petrified wood at Glendive, Dawson Co., Mont.

"Coming back we stopped in a gulch just outside Glendive, going east, and found lovely petrified wood."—letter dated July 12, 1955, from Mrs. Olson.

NEBRASKA—John Boellstorff, Johnson (Nemaha Co.), Nebr., sent us a nice 2 x 3 specimen of gray petrified wood which he found on his farm. The specimen should take a good polish.

NEVADA—Fine crystals of jarosite have been found in Pioche, Lincoln Co., Nev.

NEW HAMPSHIRE—Nancy Swanson, 153 Watchung Ave., West Orange, N. J., reports on a recent trip to some feldspar quarries in New Hampshire.

"At Acworth (Sullivan Co.), N. H., we found a few chunks of broken golden and green beryl xls. Most fascinating here were the huge 12 inch hexagonal cross sections of green beryl and black tourmaline xls in the rock wall right where we could touch them but couldn't get them out short of blasting the bed rock and thus destroying them."

NEW JERSEY—Lawrence O. Chapman, 41 Church St., Franklin (Sussex Co.), N. J., has sent us some interesting specimens of dark gray oolitic limestone from his area.

"Have slabbed and polished 2 specimens of oolitic limestone from Franklin, N. J., which I am mailing you. The one from Scotts Road has been exposed to oxidation for about 4 years which gives uncut specimens, when cleaned, a cameo effect.

"The specimen from Paulison's Sink No. 3 cave is poor in oolites but offers a geological study. One end shows alteration to white calcite with oolites. The other end shows white calcite oolites im-

bedded in gray. The strata is apparently 1 foot thick which contains the oolites. While I have brought home many specimens only a few contain oolite. Most oolites are pin point in size and cannot be seen with the naked eye. If and when I locate good specimens I shall remember you.

"In Paulison's Sink No. 5, the cave has cut out thru oolitic limestone. Some hard and some so soft it can be broken with the hands. This stone hardens somewhat when brought out."—letter date May 15, 1955, from Mr. Chapman.

NEW MEXICO—Beautiful specimens of transparent reddish cubes of cuprite have been found in the copper mines of the Santa Rita district, Grant Co., N. Mex.

NEW YORK — Last May the Glens Falls Mineral Club held a 2-day field trip on which Edward J. Linehan, Associate Editor of Town Journal, 1111 "E" St., N. W., Washington 4, D. C., was an honored guest. Here is a brief resume of what was found, dated May 17, 1955, from Ierome F. Lapham, 21 Grant Ave., Glen Falls, N. Y.

"Mr. Edward Linehan proved to be a very keen and interesting person to all of us. He can no longer be classified as a tyro or neophyte, only that of a rockhound is his due. The weather for the two field trips was made to order and we believe that he enjoyed it—for he now has a start of a mineral collection. Last Saturday we went to Gore Mt. near North Creek (Warren Co., N.Y.) where Mr. Charles Barton of Barton's Mines (garnet) went all out as our host to assure us a truly wonderful field day. Sunday we went to Overlook (Saratoga Co., N. Y.), for more collecting.

"From a mineral standpoint the collecting was just short of phenomenal for all. I submit a listing in brief for you.

"GORE MT."

*Hypersthene xls*—in matrix, some as singles and in groups, occasionally a doubly terminated xl.

*Hornblende xls*—lustrous, up to 1" in length.

*Garnet xls*—several complete xls were removed from the host rock—complete which is unusual for there.

Massive dark feldspar (?) or *hypersthene?* —which when cut cabochon shows both 4 and 6 rayed stars (to be checked).

'OVERLOOK (FELDSPAR QUARRY')

*Allanite xls*—at least one with termination.

*Feldspar xls*—both orthoclase and microcline.

*Tourmaline xls*—black of course.

*Manganapatite xls*—fluorescent.

*Samarskite—aeschynite xls*—sometimes referred to as polycrase by some people.

"I mention some of the more outstanding specimens. Mr. Linehan on his own acquired a microcline xl about 2" in size complete with intergrown veins of black tourmaline making it a truly exotic xl. Mr. Elmer Rowley found a group of allanite xls—a really superb specimen. My brother, Ralph, a xl of S-A, 1⅜ x ¾ x ¼" with termination. Gladys (my wife) an allanite 3½" long by 1" wide. (Sorry but it's broken due to blasting but it goes into the collection.) Several small pieces of faceting grade rose quartz were picked from the dumps.

"Everyone without exception was at one time or another both pleased and excited by specimens which were found. I hope that Mr. Linehan will not gauge future field trips by these past two for our good fortune was exceptional not ordinarily to be encountered (in my experience)."

NORTH COROLINA — Some good specimens of green epidote masses with some smoky quartz, and masses of black magnetite have been sent us by Col. Orville M. Hewitt, 6 East Forest Road, Biltmore Forest, Ashville, N. C. The specimens came from the Cranberry Iron Mine (magnetite), Cranberry, Avery Co., N. C.

NORTH DAKOTA—Mrs. Ed P. Olson, Box 425, Beresford, S. D., sent us a specimen of dark brownish petrified wood which she collected for us at Bowman, Bowman Co., N. D.

OHIO—Again we have the pleasure of printing some notes sent us by our good friend, C. O. Gettings, 2001 Starr Ave., Toledo 5, Ohio. These notes, dated July 1, 1955, are as follows:

"As new friends decrease so do my letters.

"Sometime ago you asked about the doubly terminated quartz xls reported to be found at Swine Creek in eastern Ohio (see Jan.-Feb. 1953 R&M, p. 35). I have secured several from a collector in that district. They are well crystallized. While the surface is slightly frosted the interior is very gemmy. They average 1¾ inches in length by ½ inch.

"Ellsworth, Ohio, has been for years the Dana location for selenite. Now a new and far superior selenite both in size and interesting crystallization is found in the clay near Ravenna (Portage Co.), Ohio. Here are found clear, well terminated and hopper type selenites. Some are fluorescent. The size averages 2 inches.

"Why are many collectors so reluctant to write up their finds? The above items are not truly mine but passed on with the consent of a Cleveland collector."

OKLAHOMA—R. F. Lytle, 411 N. E. 9th St., Oklahoma 14, Okla., and Mrs. Marie Kennedy, 737 West Kansas. Blackwell, Okla., have each sent in a clipping from an Oklahoma newspaper (name unknown) dated Sunday July 3, 1955, relative to Oklahoma's largest petrified tree. As Mrs. Kennedy sent in some of her own notes, we will quote from her letter of July 4, 1955.

"A tree grows in Brooklyn—and 100 million years ago, a giant redwood grew in Oklahoma. This big tree is slowly eroding from the sandstone where it has slept through the centuries. The location is northwestern Cimarron county, 18 miles west and 13 miles north of Boise City—in the Oklahoma Panhandle. It is seven miles northeast of Kenton, on the north side of the Cimarron River.

"This big petrified tree is not all exposed to view. Much of it is still buried but 130 ft. of it is exposed. The tree is 8 to 10 feet thick at the base, 5½ feet thick at the middle and 4 feet thick 130 feet from where it starts. It was probably a 200 foot high redwood.

"Fully a train load of petrified wood has been picked up in this area, and that much more is still left. Ranchers have used the wood to make fences and decorate their front yards.

"Fossil wood is found in many sections of Oklahoma. The most spectacular is a giant stump erected as a memorial to David White, noted plant paleontologist and one-time Chief Geologist of the United States Geological Survey. The fossil stump may be seen on the East Central State College grounds at Ada, Oklahoma. It is a Collixylm—The oldest tree known to man. Its age is estimated to be 350 million years.

"I hope this will be of interest to you, Mr. Editor. It's 103 degrees hot in Oklahoma. Wow."

OREGON—We have received an interesting specimen of diatomite (opal), a soft, earthy gray mass that was found in Terrebonne, Deschutes Co., Ore. The donor was Multnomah Minerals, Box 7131, Multnomah, Ore.

PENNSYLVANIA — Some few months ago we received a rare formation of prehnite from Floyd R. Faux, 635-4th Ave., Bethlehem, Pa. The mineral occurs in tabular, fan xls, is very pale green in color, and found in a narrow dike—6-8 inches wide, approx. 10 feet long—in a granite quarry at Coopersburg, Northampton Co., Penn.

RHODE ISLAND — Green epidote has been found at Warren Point near Little Compton, Newport Co., R. I.

SOUTH CAROLINA — Deep red massive garnet has been found in pegmatite at Lee Shoals, Anderson Co., S. C.

SOUTH DAKOTA—"We looked for Fairburn agates in the Fairburn (Custer Co.) S. D., fields but I found none, and my husband who is not a rockhound found a nice one. We found lots of

pretty ribbon or Badlands agates. I understand people are picking them up in abundance now and slicing and polishing them, as Fairburns are scarce."—letter dated July 12, 1955, from Mrs. Ed P. Olson, Box 425, Beresford, S. D., who with Mr. Olson visited the area recently.

TENNESSEE—Carl Seyfert, Jr., Box 1803, Vanderbilt Univ., Nashville, Tenn., informs us that a fairly good amount of Iceland spar (calcite) can be found at the Boatman fluorspar mine, outside of Rome, Smith Co., Tenn.

TEXAS—A brownish platy mass of barite (stained brown by brown clay) has been sent us by Richard F. Day, Box 543, Alpine, Texas.

"Found 3 miles east of San Lake, San Saba Co., Texas."—on label.

UTAH—Rabbittite is a new hydrated calcium magnesium uranyl carbonate found in the Lucky Strike No. 2 mine, San Rafael district Emery Co., Utah, in July 1952. It is pale green, finely acicular to fibrous, silky, and occurs as an efflorescence on the mine wall.

"Rabbittite is named in honor of John C. Rabitt, who was chief of the U. S. Geological Survey Trace Elements Section from 1947 to 1953—in recognition of the leadership and inspiration he gave to members of the laboratory. Lucky Strike No. 2 mine is a uranium deposit in the Shinarump conglomerate (Triassic), between the San Rafael River and the Muddy River on the west flank of the San Rafael Swell. (See — Rabbittite, A New Uranyl Carbonate from Utah, by Mary E. Thompson, Alice D. Weeks, and Alexander M. Sherwood, March-April, 1955, AMERCAN MINERALOGIST, pp. 201-206 (Editor, Dr. Walter F. Hunt, Dept. of Mineralogy, University of Michigan, Ann Arbor, Mich.).

VERMONT — A milk-white slab, of white statuary marble, (one face polished) has been sent us by the Pocono Mineral Shop, 21 Park St., East Stroudsburg, Penn. The locality for this fine specimen is the marble quarries at West Rutland, Rutland Co., Vt.

VIRGINIA—I am sending you some specimens that I found in Roanoke Co., Va., that appear to be petrified berries; some of them are attracted to a magnet."—letter dated May 2, 1955, from D. D. Litteral, Box 183, Dublin, Va.

"From farm of A. M. Thomas, Roanoke Co., Va."—on label.

The specimens were pyrite concretions that have altered into black magnetite (attracted to a magnet); black hematite; and brown also yellow limonite. These are very odd concreations—½ to ¾ inch spheres.

"The pyrite concretions that have altered in magnetite, hematite and limonite are found on the surface usually where the rain has washed away some of the top soil. They are found on the farm of A. M. Thomas on the right of Catawba Creek, going down stream. This is about 3 miles east of Catawba and 20 miles from Roanoke, Va. These concretions are found on about 3 acres of land.

"Here is a strange fact. In a section where there were wild rose berries on the ground, I couldn't tell the concretions from the fallen berries until I picked them up and noted the difference in weight of the metallic concretions and the dried berry. This same was true under some blackberry vines, under a mulberry tree, and in some field nettles, and there were some just like the seed ball of the field cedar under these trees. I picked up several that I thought were petrified and didn't know the difference until they floated to the top of the water when washing the concreations. I noticed also that when the berries on the vines in this area fall to the ground, that in about two months they take on the color of the soil and dry so hard that I can't dent one with my fingernail but they will float when put in the water.

"At an early date I'll send you some more concretions and also some of the dried berries."—letter dated May 17, 1955, from Mr. Litteral.

WASHINGTON—Nice red xls of realgar have been found in the Monte Cristo mining district, Snohomish Co., Wash.

WEST VIRGINIA—A specimen of brown, coarse xline calcite, also another, brown, xline grading into a stalactitic structure, have been sent us by Dale M. Ingersoll, 2800 Broad St., Parkersburg, W. Va. Both calcites came from an old quarry in Keyser, Mineral Co., W. Va.

"In regard to these calcites, please credit their find to Mr. F. E. Schiller of Luke, Md., as he was the one to tell me about the quarry." — card dated April 8, 1955, from Mr. Ingersoll.

WISCONSIN—Fine bronzy-yellow xls of marcasite have been found in the lead-zinc mines at Mineral Point, Iowa Co., Wisc.

WYOMING — Good size plates of muscovite have been found in Glenrock, Converse Co., Wyo.

ANDORRA—Andorra is one of the world's smallest republics. The little country is situated beween Spain and France. Small though it may be Andorra has some iron mines of which the Ransol is the largest; it's a siderite mine and is an open cut working. The Ransol Mine (Andorran name is Mener Nou) is located in the northern part of the country, about ½ mile south of the French border; the mine at present is shut down. We have a number of specimens from the mine that were collected for us by Juan Montal, Plaza Sagrado Corazon 1, Villafranca del Panades, Spain. The specimens are:

*Limonite*: Dark brown mass with thin veins of colorless quartz.

*Quartz* (*milky*): nice pure mass.

*Siderite*: dark brown mass, partly xled. It is the chief ore of the mine.

*Limestone*: dark gray compact mass.

In addition to the above, Mr. Montal sent us also a large folded geological map of Andorra. We are deeply indebted to Mr. Montal for this most welcome donation—the specimens are the first we ever saw from Andorra, while the large geological map is a valuable addition to our geological library.

The following notes on Andorra were sent us by Mr. Montal:

ANDORRA—A small principality lying between Spain and France, of 462 kms., average height 1800 mtrs., and with 6000 inhabitants. It is one of the wonderlands of the Pyrenees and its foundation dates from the year 784—King Charlemagne. It was a feudal possession of the Counts of Urgel and Foix, afterwards becoming a Joint Principality of the Bishop of Urgel and of France, the delegate of the latter being the prefect of the French Department of the Pyrinees Orientales.

The country is governed by a Very Illustrious General Council under the Presidency of the two Syndics. The governing council is made up of 24 councillors, four from each one of the six parishes.

Andorra has no army, customs, tax or contribution. To obtain funds, the General Council charge an amount of the 20/25% on several articles, as flour, oats, barley, gasoline and oil.

LOCATION—42 degrees 28′ latitude North and 0 degrees 45′ longitude West of Paris meridian.

HEIGHT—Lowest village is San Julia de Loria, 909 mtrs. Highest village is Soldeu, 1825 mtrs. Highest mountain is Pica d'Estats, 3,141 mtrs.

ROADS—Seven mtrs. broad. Regular to good quality.

CLIMATE—Cold. Snow covers most part of the country during six months. Past July 2nd snowing, also August 15th, on the top of high mountains.

WATER—Excellent.

LANGUAGE—Catalan. Also current is Spanish and French.

MAIL, PHONE, CABLE—Spain and France maintain offices. Interior mail, no regular postage-stamp.

MONEY — Andorra has no private money. First place in circulation are Pe-

**A view of the Ransol siderite mine in northern Andorra. The collector is Juan Montal, of Villafranca del Panades, Spain. Some of the specimens he collected (August 17, 1954) were sent to Rocks and Minerals.**

seta and Franc, also all c'as·es of money of the world is free. Only private emission of 50,000 Pesetas in 1936, was retired December 31, 1938.

GEOLOGY—Andorra is part of the Pyrenees Mountains. Its typically valleys are U-carved from the quaternary glaciers, as you can see in photos that I send you.

CANADA — A nearly pure mass of very dark gray (almost black) labradorite, one face polished, has been sent us by Pocono Mineral Shop, 21 Park St., East Stroudsburg, Penn. The specimen is labelled "Canadian Black Granite" and comes from Lake St. John, Que., Canada.

CEYLON—Colorless, translucent gem quality moonstone, having a pearly opalescence (adularia variety of orthoclase) and coming from around Colombo, Ceylon, has been sent us by Fritz G. H. Carlson, 12 Beach St., Fairhaven, Mass.

COLOMBIA — The following note comes from W. T. O'Gara, Dept. Exploration, International Pet. Co., Ltd., Edificio Colombiana De Seguros, Bogota, Colombia.

"While in Bucaramanga, Colombia, recently I was able to visit the gold mines at a place called "California," about 45 km. N/E of Bucaramanga in the central igneo - metamorphic massif east of the city. Gold occurs in native form and also closely associated with pyrite and chalcopyrite. The mines are primitive but very interesting."

ENGLAND — Mrs. Patricia Berry Barker, 2 Park Road, Diss, Norfolk, England, sends in the following item in her letter dated July 4, 1955:

"Here is a note that might come in handy for 'World Occurrences.'

"The British Automobile Asso. Guide lists for Chellaston, Derbyshire, England:

'Formerly noted for its alabaster quarries.'

"We visited the quarry which is now mainly a brickyard and watched the little cars on tracks being loaded with red clay and pushed the few yards to furnaces. In another part of the quarry a steam shovel was loading huge hunks of clay-streaked gypsum into a gypsum factory truck.

"We asked one of the foremen in the brickyard if the little alabaster ornaments (bowls, vases, mustard pots, etc.) that we'd seen all over England were made in Chellaston. He said that none were made in that town but he believed a small quantity was being turned out in the city of Derby."

SPAIN—Grayish-green gahnite xls in massive smoky quartz and coming from Bosost, Lerida Province, Spain, have been sent us by Juan Montal, Plaza Sagrado Corazon 1, Villafranca del Panades, Spain.

VENEZUELA — The following notes dated July 13, 1955, were sent us by John R. Adams, c/o Mene Grande Oil Co., Barcelona, Venezuela.

"About 200 kilometers (60 as the crow flies but people aren't crows and must follow roads) south of Ciudad Bolivar, which is situated on the south bank of the Orinoco River, is found Venezuela's famous 'Mountain of Iron' at Cerro Bolivar. The deposit is in reality a whole mountain of pure iron ore. This particular mountain is part of a disjointed and erroded chain that trends east and west. To the east are two more segments of the chain that are currently being exploited and there are more deposits but they are not presently being developed.

"I've been to the area only once, on a Sunday, so have no technical information for R & M. Will probably go down that way again during the next dry season and will try to get some facts.

"The ore is pure hematite with some alteration to limonite. There are undoubtedly other forms of iron. There is no crystallization. I would estimate the Cerro Bolivar deposit to be roughly 5 km. long x 2 km. wide and 1000-1500 feet high. Everything in sight is iron ore —pure and should take about 100 years to exhaust. No estimates are available, that I know of, of what the extent of the deposit is under the mountain.

"The mine is open pit from the mountain top down. Heavy electric shovels load dump trucks which haul the ore down the mountain to the railroad. The railroad hauls the ore to Puerto Ordaz about 150 km. N. E. at the junction of the Caroni and Orinoco Rivers where it is tipled, crushed and loaded, aboard ships.

"I believe that Orinoco Mining Co. (U.S. Steel?) is building a dam on the uppermost, lower falls of the Caroni, to supply hydroelectric power and that Bethlehem is building a steel mill." ....

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**Public Library shows the way!**

Editor R&M:

Public library copies have proven to my satisfaction that R&M is a splendid magazine. Inclosed is my check for a year's subscription.

Mrs. Howard Stanark
Rt. 1 Box 389
Forest Lake, Minn.

Aug. 5, 1955.

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**Can't bear to miss R & M!**

Editor R&M:

Enclosed find money order to continue subscription for another year. I can't bear to think of missing even one issue of a fine magazine by a great editor.

Charles R. Franz
4512 Liberty Ave.,
North Bergen, N. J.

July 25, 1955

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**R & M comes first!**

Editor R&M:

Have sent you check covering renewal of subscription for R&M. For the amateur lapidary, I think R&M is tops. I took up lapidary work as a hobby about 2 years ago and one of the first things I was advised to do was "Subscribe for R&M first!" I ordered all my equipment and still do for all supplies from the advertisers in R&M.

E. P. Hahn
67 Brookdale Gardens
Bloomfield, N. J.

Aug. 15, 1955

# IT CAN HAPPEN TO YOU!

## Not appreciated at home!

In 1916 when the Sterlington iron mines, at Sterlington, N. Y., were in operation, a beautiful banded gneiss was uncovered in the Lake Mine. Because it was just a rock, no one paid any attention to it. It so happened that the mining engineer at the mines had been corresponding with mining engineers and mining institutions not only in this country but throughout the world as well and they were canvassed in the hope an exchange could be made. Not one request was ever received from this country, but a number did come from England, Norway, Germany, Japan and a specimen of the banded gneiss was sent to each who requested it. The banded gneiss went over big. Not only were the return exchanges most generous (at least 6 fine specimens for one banded gneiss) but requests for additional specimens were also made and in addition came offers of exchange from other collectors who had heard of or seen specimens. Within a few weeks the entire supply of 100 banded gneisses was all exhausted—all going to foreign countries. What was considered to be a common, worthless rock in this country, brought hundreds of fine mineral specimens easily worth $1000 from foreign collectors.

The sad part of the transaction was that not a single specimen remained in this country, not even in the mining engineer's collection.

The moral of this story is that though a rock may not be of much value in this country, it may be highly esteemed in foreign lands.

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## No Gratitude!

Some few years ago the Editor of R & M paid a visit to the Prospect Park trap rock quarry, at Paterson, N. J. He was accompanied by a collector from another state who had never been to the quarry but was most anxious to visit it, and because the quarry was closed to collectors he had persuaded the Editor to intercede for him. The foreman of the quarry was a good friend of the Editor and so access to the working was easily arranged (the foreman died a few years ago and now the editor has no friend there).

The visit was made right after a big blast, and the two men had that section all to themselves. The collector was well equipped with sledgehammer, 3 large boxes, and bags while the Editor had only his Estwing hammer and a small bag. The collector soon began swinging wildly at some worthless rock until the Editor calmed him down and showed him some large masses that looked interesting. "Break these up," he told him.

The collector did as he was told and to their astonishment his first blow uncovered some of the finest orange colored calcite xls the Editor had ever seen. Large specimens they were too and at least 50 were collected, easily worth several hundreds of dollars, which the collector feverishly stored away in his boxes and bags. Believe it or not he didn't offer the Editor even one specimen and the Editor being so shocked by the collector's miserly action that he (the Editor) didn't offer a word of protest.

Moral—How to lose a good friend, be a hoggish collector.

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## Not lost—just can't be found!

In 1924, when the Bear Mountain Bridge road just north of Peekskill, N. Y., was under construction, the Editor of R & M was one of the contractors' engineers. The road was being put through virgin territory and many interesting minerals were uncovered. One specimen which intrigued the future Editor was granite showing faults—sometimes the displacement was one inch or more.

The new road was 3½ miles long and because of its length it was not possible to traverse its entire length everyday, nor even once a week, and so the aid of one of the workmen was petitioned. The workman was the pipefitter, who had charge of the piping on the job (water and compressed air) and who willingly offered his services. He was shown a typical specimen, explained what was wanted, and for every good specimen found a can of Prince Albert tobacco would be given him.

The pipefitter had to cover the entire stretch of piping everyday and as he traversed the area, often scrambling over blasted rock, he kept his eyes open and almost everyday would run across a good specimen—one day he found three. For weeks the pipefitter was well supplied with cans of his favorite tobacco (he must have gotten about 100 cans altogether) and finally the arrangement had to cease because no more specimens could be found.

The specimens were heavy, weighing 5, 10, or 15 lbs. each, and so because of their weight it was not convenient to take them home and so they were cached (hidden) here and there along the road, pending the day when the road would be finished and they could be collected and carted away with the aid of a car. Ten years went by before the Editor had a chance to look for them (they had been completely forgotten, as a matter of fact) and though the entire stretch of road was covered many times, not a single specimen could be found. The grading of the road and other improvements had so completely changed the terrain that not one cache could be spotted and so the specimens—worth hundreds of dollars — are "lost." Perhaps some day they may be found. Fortunately about 5 or 6 good specimens were brought home, so all was not lost.

Moral — It is easy to hide good specimens but—it may be an enormous task in finding them.

**Long may he cruise!**

Editor R&M:

Enclosed is a check for another two years' enjoyment of your magazine. The best part of it are the rock hound adventure articles, and the most exciting adventurer is Commander Sinkankas. Long may he cruise and report back to us!

Mrs. Ralph M. Lyon
Livingston, Ala.

Aug. 6, 1955.

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**Wants to exchange minerals!**

Editor R&M:

I very much appreciate R&M and would not be without it. I have not been collecting very long and so have a lot to learn. I would appreciate any information on minerals that any reader would care to send me. I have a surplus of some minerals that I would be glad to exchange with others—autunite, chlorite, rockbridgeite, etc.

Lucius P. Covey
22 Addison St.,
Laconia, N. H.

July 11, 1955.

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**W. H. Shoup**

**(Obituary Notice)**

One of Lemhi County's (Idaho) best known native sons, pioneer merchant, rancher and miner, died May 28, 1955, in a Missoula, Mont., hospital after undergoing surgery.

William Henry Shoup was born April 7, 1869, at Salmon, Idaho, a son of George L. and Lena Larnutzar Shoup. His father was the last Territorial governor of Idaho, the first state governor and the first U.S. Senator from the Gem State.

Will Shoup was the first white child born in Salmon township. He was educated in the Salmon elementary schools. After completing his studies in the local grade schools he was sent to Dubuque, Iowa, for his high school education.

For many years, until 1921, he operated a mercantile establishment in Salmon and in 1922 was appointed Salmon postmaster.

In 1925 the family moved to Wallace, Idaho, where he was employed by the Coeur d' Alene Hardware. Five years later the family returned to Salmon where he ranched until going to Leesburg in 1931 to operate for several years some placer mines.

He is survived by his widow, three sons, W. R. Shoup of Missoula ,Mont., W. R. Shoup and G. Elmo Shoup, both of Salmon, a brother, George, and two sisters, Laura and Margaret.

# THE SAND COLLECTOR

CONDUCTED BY PETER ZODAC
PEEKSKILL, N.Y.

"I am sending you a sample of sand taken in the Catalina Foothills, about 30 miles from Tucson, Ariz."—letter dated July 8, 1955, from Robert D. Beale, Odell, Ill.

The same is a coarse, dark gray sand consisting chiefly of quartz (smoky, grayish-blue chalcedony) with some lustrous black magnetite and bronzy mica.

"Santa Catalina Mountain Foothills, Pinal Co., Ariz."—on label.

### Creek Sand from Amador Co., Calif.

This is a coarse, brown sand (not attractive). It consists of quartz (smoky, brownish), brown sandstone, slate (brown, black), a little dull black magnetite and considerable brown clay which coats most of the sand grains. Donated by Peter Mohlsick, 2830 Darwin St., Sacramento 21, Calif.

"Sand from Sutter Creek—between towns of Volcano and Sutter Creek, Amador Co., Calif."—on label.

### Creek Sand from Jordan Creek, Idaho

Some few months ago we received a sand sample collected for us by Miss Nora Lee Dennett, 242 S. Young, Wichita 12, Kansas.

The sample is a coarse, gray lustrous sand. It consists chiefly of silvery lustrous muscovite and quartz (chiefly smoky, some colorless, also reddish) with some grayish feldspar and a little black magnetite.

"Creek sand from a sand bar in Jordan Creek, approximately 10 miles downstream from Silver City, Owyhee Co., Idaho. Had to wade the creek to reach this sand bar but couldn't resist the sparkling sand. Silver City stands at the headwaters of Jordan Creek."—on label.

### Quartz Sand from Sitka, Kansas

Glen E. Kiser, Douglass, Kans., has sent this department a large number of sand samples, many coming from his state. One of the samples received is a medium grained reddish-brown sand consisting almost entirely of quartz (colorless but stained red) with some reddish clay which gives the sand its color.

"From Hiwy 183 in Kansas (north of Oklahoma line) south of Sitka (Clark Co.,) Kansas.'—on label.

### River Sand from Leestown, Ky.

Leestown, Franklin Co., Ky., is on the Kentucky River. From the river at Leestown, we have a sand sample that was collected for us by Charles Johnson, 307 W. 4th St., Frankfort, Ky.

The sample is a fine grained sand. It consists chiefly of quartz (brownish smoky) with smaller amounts of brownish limonite, black magnetite and silvery muscovite. "Sand is from the Kentucky River, at Leestown, Ky."—on label.

"Cedar Cove spring flows from a hill about a mile N. E. of Frankfort, and following the valley that was once the bed of the Kentucky River, runs into that river at Leestown. This is a large spring and in the early days was Frankfort's water supply, being piped into town through wooden pipes—cedar logs with holes bored through them.

"The first cabins were built at Leestown by Hancock Lee, Cyrus McCracken and others in 1776, but before that it was a camping spot for settlers traveling by river. The shallow ford, the spring, the bottoms on each side of the river seemed an ideal location for a town. The settlement was raided by the Indians, its occupants killed, and the village of Frankfort was established a mile south, up stream, at Franks Ford. (the name Frankfort came from this location.) At the present time Leestown is a small village on the north side of Cedar Cove run, Geo. T. Stagg distillery on the south side."—letter dated April 20, 1955, from Mr. Johnson.

**River Sand from Benedict, Md.**

Benedict is on the Patuxent River in Charles County, Maryland. From the river at Benedict we have a sand sample that was sent us by Leroy Leisure, 500 Townsend Ave., Baltimore 25, Md.

The sample is a medium grained brownish sand. It consists chiefly of quartz (colorless, brownish, smoky, bluish-gray chalcedony) and smaller amounts of brown to gray feldspar with much smaller amounts of lustrous dark brown limonite, silvery muscovite, black magnetite and white sea shells.

"Benedict, Charles County, Md. Benedict was founded in 1683, and served as a port and customs stations in early Maryland. When the British were ready to attack Washington during the War of 1812 they landed at this southern Maryland town."—on label.

**Dune Sand from Leelanau Co., Mich.**

Mrs. John Roder, R4, Hot Springs, Ark., sent us a sand sample which she collected in western Michigan. The sample is a fine grained brown sand consisting almost entirely of brownish quartz—a tiny amount of black magnetite is also present.

"From Sleeping Bear Sand Dunes, Leelanau Co., Mich. Highest point between Green Lake and Lake Michigan."—on label.

**Quartz sand from Herman, Minn.**

"Sand from Herman Beach (near Herman, Grant Co., Minn.) of old glacial Lake Agassiz, collected by Mrs. C. H. Havill, 5450 Bryant Ave. N., Minneapolis, Minn., on a geological trip of the Minn. Geological Society. Forty-one members made the trip in bus and 3 cars adding 8 persons. Mr. Lawrence King, our President, leading the trip with wife and grandson, Timothy. Trip made June 25 and 26, 1955."—letter dated July 7, 1955, from Mrs. Havill.

The sample is a coarse, gray sand consisting of quartz (colorless, smoky, brownish, reddish), feldspar (pinkish, whitish), black magnetite and white limestone.

**Cave Sand from Spider Cave, N. Y.**

Spider Cave is north of Schoharie in Schoharie Co., N. Y. From the cave we have a sand sample that was collected for us by Lawrence Chapman, 41 Church St., Franklin, N. J.

The sample is a dark gray coarse sand. It consists of dark gray limestone with a small amount of smoky quartz and a tiny mount of black magnetite whose surface has oxidized to reddish-brown limonite.

"Sand taken from beneath a flat rock in cave pool. Stream flows from inaccessible passage out of cave."—note with label.

**Beach Sand from Nags Head, N. C.**

Nags Head is a tiny settlement on that sandy peninsula extending along the coast line of North Carolina in Dare County. From the beach at Nags Head we have a sand sample that was collected for us by Ben J. Sterling Jr., Rocky Glen Amusement Park, Moosic 7, Penn.

The sample is a medium grained gray sand. It consists chiefly of colorless quartz—with some larger grains of white banded quartz, also brownish quartz. Some sea shells (white, brownish) also present.

**Quartz Sand from Wewoka, Okla.**

Glen E. Kiser, Douglass, Kans., donated this sample which he collected

from Hiwy 270, west of Wewoka, Seminole Co., Okla.

It is a medium grained brownish sand consisting chiefly of colorless quartz with a small amount of pinkish feldspar.

**Beach Sand from Myrtle Beach, S. C.**

Myrtle Beach, Horry Co., S. C., is on the Atlantic Ocean. On July 6, 1954, the conductor of this department paid the little town a visit and a stop was made at Springmaid Beach in Myrtle Beach State Park. It was a beautiful beach about 2000 ft. long and 150 ft. wide and a sand sample was collected in front of the Recreation Bldg.

The sample is a fine grained gray sand consisting chiefly of colorless quartz (much of it is transparent) with a small amount of broken up sea shells (mostly white, some pink).

**River Sand from Murfreesboro, Tenn.**

Murfreesboro is on the east bank of Stones River in Rutherford County, Tenn. From the river we have a sand sample sent us by Juliette Desport, 1229-17th Ave. So., Nashville, Tenn.

The sample is a medium coarse grained, rusty-brown sand. It consists chiefly of brownish limonite and brownish clay with smaller amounts of blackish magnetite (stained brownish by limonite) and colorless quartz. "Stones River Sand, Murfreesboro, Tenn. in foothills of the Cumberland Mts."—on label.

**Dune Sand from Kermit, Texas.**

"I am mailing you a sample of sand from the traveling sand dunes in Winkler County, Texas. This sample is from a dune about 3 or 4 miles N. E. from the town of Kermit, Winkler County, Texas." —letter dated Jan. 14, 1955, from J. B. Carson, Sierra Blanca, Texas.

This is a fine grained, brownish sand and consists entirely of quartz (brownish, colorless, smoky, brownish chalcedony).

**River Sand from Newfoundland, Canada.**

We have a new subscriber in Newfoundland who sent us recently 10 sand samples from the island. He's Jim Elliott, c/o Mannix-Raymond (J. A. Jones Const. Co.), Stephenville, Newfoundland, Canada. The first sample is a river sand which is dark gray and medium grained. Consists of pinkish feldspar, smoky quartz, silvery muscovite, black slate and a little amount of green epidote and black magnetite.

"Taken underwater, while in a canoe, in Harrys River near the mouth where it empties into St. Georges River." — on label.

Stephenville (on St. Georges Bay) is on the S.W. coast of Newfoundland and all 10 samples come from around Stephenville. In addition to the sand samples, Mr. Elliott sent us a large, folded map of Newfoundland, all of which we deeply appreciate.

**Beach sand from Elsinore, Denmark.**

Elsinore, an old and historic town and seaport of Denmark, is on the northeastern coast of the island of Zealand, and on the western shore of The Sound, (here only 2½ miles wide.) From the beach in Elsinore, we have a sand sample that was collected for us by Mrs. Patricia Berry Barker, 2 Park Road, Diss, Norfolk, England.

The sample is a coarse, dark gray sand. It consists chiefly of quartz (colorless, smoky, dark smoky, red chalcedony, dark gray flint) with feldspar (pinkish, white), silvery muscovite, and sea shells (blue, white). Small bits of black iron (no mineral) also present.

"I'm sending a bottle of coarse sand we collected in May from the strip of beach in front of Kronborg Castle, Elsinore, Denmark. This famous castle faces on The Sound and looks across to Sweden. This is supposed to be Hamlet's Castle, but we found it hard to believe since Kronborg is such a cheerful castle, not at all the gloomy place I had associated with the castle in Shakespeare's Hamlet."—letter dated June 4, 1955, from Mrs. Barker.

**Beach Sand from Scarborough, England.**

Scarborough, Yorkshire, England, is on the North Sea. From the beach we have a sand sample that was sent us by

Harold Poole, 315 Wadsworth Ave., Philadelphia 19, Penn.

This is a fine grained, gray sand consisting chiefly of quartz (colorless, smoky, brownish, brown jasper) with some brown limonite, and a tiny amount of black magnetite. Some sea shells (white, brownish, bluish) also present.

"The Scarborough sand was sent by my brother who lives there." — letter dated July 11, 1955, from Mr. Poole.

#### Shell sand from Dundrum Bay, Ireland

Dundrum Bay (Co. Down) indents the east coast of Ireland. From the beach on the bay we have a sand sample that was sent us by Sandy Ramsay, 1015 Aikenhead Rd., Kings Park, Glasgow S4, Scotland.

The sample is a coarse, gray sand consisting entirely of sea shells (white, gray and dark gray).

#### River sand from Varzi, Italy

Mr. and Mrs. James Azzaretti, prop. of Post Grill, Peekskill, N. Y., visited Italy during July and August, 1954, and a few days were spent in Varzi, Lombardy Province, the town where Mr. Azzaretti was born. Varzi is on the little river Staffora, which is dry for most part of the year, and from the river he collected a sand sample for us. This is a dark gray fine grained sand. It consists chiefly of dark gray marl with smaller amounts of white calcite and dark gray limestone plus a tiny amount of silvery muscovite and black magnetite.

#### Limestone sand from Saltillo, Mexico

This is a coarse, dark gray sand consisting chiefly of limestone (gray, white, brown) with some gray chalcedony. Some of the grains fl. slightly (red, also yellow) under the long wave lamp.

"From Saltillo, Coahuila, Mexico."—note on label. Donated by Glen E. Kiser, Douglass, Kans.

#### Garnet sand from Runanga, New Zealand

Runanga is on the west coast of South Island, New Zealand. From the beach we have a sand sample that was collected for us by Miss Winifred H. Arnold, 2020 Magnolia Ave., Long Beach 6, Calif.

"The town of Runanga was laid out by the Government for miners employed at the neighboring collieries. Runanga is not far from Greymouth. The gold rush days from about 1865 to 1873 brought thousands of people to the West Coast. There is still lots of gold in this area, but the 'rush' is over, and the towns are small. Some of the beaches are sandy, others are just tons of almost perfectly round water worn stones."—note sent by Miss Arnold with the sand sample.

The sample is a dark red medium grained sand. It consists chiefly of pink to dark red gemmy garnet with minor amounts of colorless quartz, black lustrous magnetite, and green olivine. Some bluish opalescent sea shells also present. "Top of sand (lots of pink in it), near Runanga, West Coast of South Island, New Zealand, 1951."—on label.

#### Beach sand from Arbroath, Scotland

Arbroath is a seaport on the North Sea on the east coast of Scotland. From its beach we have a sand sample that was sent us by Sandy Ramsay, 1015 Aikenhead Rd., Kings Park, Glasgow S4, Scotland.

The sample is a fine grained reddish sand. It consists chiefly of gemmy garnet (red, pinkish), and quartz (colorless, smoky, white, reddish), with cream colored calcite, black magnetite, silvery muscovite, and sea shells (white, gray, blue, brown).

"Beach sand from Arbroath, Angus, Scotland. This locality should be of special interest to Americans as one of the places bombarded by that renegade Scot (don't throw that brick), Paul Jones, first admiral of the American Navy. The inhabitants are known as 'Red Lichties' (Red Lights) because of their delectable habit of luring ships to destruction onto the local rocks by the manipulation of navigating lights."—on label.

### Ilmenite sand from Umhlanga Rocks, So. Africa

Umhlanga Rocks, on the Indian Ocean, is a seaside resort in Natal, South Africa, 12 miles north of Durban. From the beach we have a sand sample that was collected for us by F.C.M. Bawden, P. O. Box 1167, and Mrs. I. N. Gush, P. O. Box 1128, both of Johannesburg, South Africa.

The sample is a medium grained, brownish-black sand. It consists of lustrous black ilmenite, lustrous black magnetite, pink to red garnet, green epidote, and sea shells (brown, white, pink).

### Beach sand from Majorca Island, Spain

The Balearic Islands, of which Majorca is the largest (60 miles long and 40 miles wide) lie in the Mediterranean Sea, east of Spain to which country they belong. Palma, on the S. W. coast of Majorca, is the largest city of the group and is also the capital; it's located on the Bay of Palma. A few miles S. W. of Palma and also on the Bay of Palma is Cala Mayor, a little town. From the beach at Cala Mayor we have a sand sample that was sent us by Sandy Ramsay, 1015 Aikenhead Rd., Kings Park, Glasgow S4, Scotland.

The sample is a coarse, gray sand. It consists almost entirely of calcite (white, brownish) and limestone (gray, brownish). A tiny amount of black magnetite also present.

### Beach sand from Dublon Island, Truk Group

The Truk group of Islands in the Pacific Ocean once belonged to Japan but now are U.S. Trust Territory. The group consists of nearly 100 islands, closely grouped together, all high and broad, and one of the largest is Dublon Island. The Japanese chief port and administrative center was on the eastern side of Dublon.

From Dublon Island we have a sand sample that was sent us by Miss Winifred H. Arnold, 2020 Magnolia Ave., Long Beach 6, Calif.

The sample is a medium grained, flesh colored sand. It consists chiefly of sea shells and coral (brown, white, cream) with some rusty brown magnetite (it may be bits of rusty iron or both.).

### Beach sand from Rhyl, Wales

Rhyl, in Flintshire, North Wales, is on the Irish Sea; it is a seaside resort with a fine expanse of firm sandy beach. From the beach we have a sand sample that was sent us by Harold Poole, 315 Wadsworth Ave., Philadelphia 19, Pa.

The sample is a fine grained, dark gray sand. It consists chiefly of quartz (colorless, smoky, reddish) and sea shells (white, brownish). A tiny amount of black magnetite also present.

"The Rhyl sand is from a cousin of mine who lives there."—note on label.

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### Must have his sleep!

Editor R&M:

Please be advised that my address has been changed. Don't want to miss the next issue—would not be able to sleep staying awake nights wondering what that issue holds.

Frank E. Brown
2 Thomas Ave., So.
June 26, 1955. Minneapolis 5, Minn.

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### What one exchange can do!

Editor R&M:

So far, I have received 42 replies from the swap ad I ran in the May-June issue of R&M. My wife and I have already received 19 boxes from different collectors all over the country. I have never written so many letters in my entire life, but we have really met some nice people through letters. Our collection is really growing, too. We have added a number of excellent specimens, and we still have a lot more coming.

Nolan De Laughter
P. O. Box 1404
El Dorado, Ark.

August 15, 1955

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### Booklet Answers Geiger and Scintillator Questions

Valuable information for Uranium Prospectors is now available free upon request from Precision Radiation Instruments, Inc. of Los Angeles. The 20 page, pocket-size booklet "64 Questions and Answers on Geiger Counters and Scintillators" covers, in layman's terms, such subjects as: claim staking, government bonuses, assaying of radioactive ores, aerial and ground surveys for uranium, oil and gas fields, effect of weather on radiation, use of various types of instruments and many other interesting topics. For your free copy, write: Precision Radiaton Instruments, Inc., 4223 W. Jefferson Blvd., Los Angeles 16, California.

# FOSSIL DEPARTMENT

Conducted by Howard V. Hamilton
115-B East Adams Ave.
Vandergrift, Pennsylvania

## THE MIOCENE OF THE CALVERT CLIFFS OF MARYLAND

by: Arthur H. Hopkins, M.D., 741 Beacom Lane, Merion, Pa.

For anyone interested in accumulating a fine and varied collection of Miocene fossils, especially marine invertebrates, there is probably no more satisfactory collecting ground in the Atlantic Coastal Plain than that offered by the Calvert Cliffs, bordering the Western Shore of the Chesapeake Bay in Southern Maryland.

In this rolling country the Cliffs extend for a distance of 30 miles and in Calvert County elevations reach close to 200 feet near the Bay. The shore line has receded as much as 700 feet in 88 years. This is the country which has exposures chiefly of Miocene Calvert rocks, Choptank and some St. Mary's beds. The Calvert formation, in its lower portion, is composed of the Fairhaven diatomaceous earth member but the remaining 50 feet above this is a sandy clay bed, containing diatoms and in many areas thin, abundantly fossiliferous beds. Aside from the marine invertebrates, there are bone fragments, fish plates and shark's teeth.

The Choptank formation outcrops in a patchy band parallel to the Calvert and it too, is composed of sand and sandy clay. Some beds are abundantly fossiliferous as seen at Kenwood Beach where Zones 17 and 19 of Shattuck furnish chiefly such pelecypods as the Pectens, Arcas, Isognomons, etc., as well as barnacles: gastropods in greater variety than in the Calvert and finally vertebrate remains. The St. Mary's formation at Little Cove Point is sandy clay and was formerly very fossiliferous and a good locality for gastropods, though in the last two years the writer has found it difficult to locate any shell bed, though some gastropods are to be found on the beach, the most interesting one being the Ecphora quadriquastata. It is said that 90% of the shells found on the beach are Miocene in age.

### Locations

To reach the collecting areas any good road map of Maryland will make it very clear. From Baltimore, go south, on route 301 to route 4 and from Washington go east on route 4 to 301. At this junction continue east on 4 to Drury, south on 416 to 260 and east on 260 to North Beach. From North Beach south the road map will guide you to Chesapeake Beach, and Randle Cliff Beach, the latter being the best of the three, none of which is as satisfactory as some of the localities further south. As the Willow's Beach Colony is private, one should ask to see the manager at the business office at the entrance and get his permission to collect, There is a good shell bed north of the bath houses where there is one slumped area making it possible to collect, otherwise the Cliff is completely perpendicular. The shell bed is about 30 feet above the water or beach level, and quite inaccessible.

Plum Point is the next area and this is fair for shark's teeth but it no longer furnishes the fine variety of Miocene fossils for which it was once famous. Scientists Cliff and Camp Roosevelt are both private and afford fair collecting without the large variety of specimens found in some of the other localities. Permission should be gotten to go on either of these properties.

Kenwood Beach, probably the finest collecting spot of all, is reached further south by following to the beach a road sign on the west side of route 2. This

small road is route 509. Just before reaching the beach there is another Kenwood Beach sign with arrow pointing south. It might be well however first to pass that sign and continue straight on to the beach about 100 yeads ahead. Park there and walk north along the beach for a short distance to the area in the Cliff which has slumped. There is some material to be found here but it is quite friable. Return to car and to the sign to Kenwood Beach (about 100 yards) and there turn left and stay left to beach and then on up a steep hill which has a blind ending at top. There let your "chauffeur" or other driver leave you and take the car back to park it at foot of hill. The collector may then climb down the long stairway in the woods to the beach where by turning right and climbing over fallen trees he will soon come to a slumped section of the cliff with its shell bed well exposed and very accessible. Perhaps the best way to illustrate the abundance of this bed is to say that when collecting there last year the writer dug out of this sandy bed a large Panopea Americana packed with sand and with both valves fully intact. It was about 8 inches long with a circumference of 10 inches. To protect it I wrapped it in cloth and packed it with great care. On arrival home when unpacked and opened to my surprise and satisfaction I was able to pick out 27 different species of Miocene shells, some very tiny, some young and others mature. This seemed like quite a haul from the contents of one shell until I heard from Mr. John Parker of the Academy of Natural Sciences, who was digging beside me at the time and who recovered another Panopea very much like mine. He reported 43 species of shells from the contents of his specimen!

Further south, at Camp Conoy, some internal casts of Miocene fossils may be found and then at Cove Point probably the most interesting finding would be the black sand on the property of the Titanium Ore Co. near the lighthouse. This contains Titanium and Zircon, the latter having a good orange fluorescence. Finally there is Little Cove Point as mentioned above.

### Time for Collecting

Because many of these beaches are privately owned and many of the homes are directly on the water front and further because their owners use them fairly constantly during the summer months it is suggested that June, July and August would be the best months not to attempt to do any collecting in this area.

For the past 3 years it has been my privilege to lead the Paleontology group of our Mineralogical Society of Pennsylvania on what we call our annual Plum Point Field Trip. After collecting on a Saturday afternoon we have gone down to the Bowen's Inn at Solomons for a good dinner and after this we have been the guests of the Maryland Department of Research and Education at their Biological Laboratories where some exceedingly interesting illustrated lectures have been given. After an evening of good fellowship we have been put up for the night in the fine dormitories of the Department. For such courtesy and hospitality we are indeed appreciative.

For further information relative to the Geology and Paleontology of this area and especially for aid in identification of species the following references are given. 1 "Guidebook III", "The Coastal Plain Geology of Southern Maryland" by R. M. Overbeck, The Johns Hopkins Press, Baltimore, 1950. 2: Maryland Geological Survey "Miocene" Text and Plates (2 volumes). The plates are invaluable for identification.

### Letter

An interesting letter was received from John A. Allen, 1256 McLaran Ave., St. Louis, Missouri, describing a fine specimen of fossil coral (hexacoralla) of Pennsylvanian age, which he collected near Webster Groves, Missouri. It was found near U. S. highway 6 and Grant Road in a suburb of St. Louis. A portion of the letter follows: "The specimen was 16 inches by 18 inches by 6 inches thick and

(Continued on page 509)

# AMERICA'S FIRST MICA MINE?

Paul M. Tilden, Warner, N. H.

How many thin sheets of muscovite mica do you think it takes to keep today's steady flow of talented acting and witty humor available on your TV screen? Fifty? A hundred? Two hundred? Probably you don't know. I don't know, either, or care to know. But it is a large number, you may be sure of that.

In the earlier days of America, glass was a more treasured item than it is today, if one might judge by the number of empty beer bottles weathering from the snow-banks along our Northern highways every spring. Glass was expensive; and muscovite mica filled the bill as a cheaper substitute, in addition to having some valuable properties of its own. True, all but the nicest grades were apt to have some inclusions—magnetite, flattened garnets and beryls, and tourmaline, to mention the commonest; but this mattered little, and provided a mineralogical side-show for the customer, if he were inclined to notice.

Mica was mined in the United States very early; and the following paragraphs from one of the letters of New Hampshire's John Sullivan, Major-General in the Continental Army, makes one wonder if the famous Ruggles pegmatite at Grafton Center, N. H., was not America's first producers. It was not the Ruggles Mine in Sullivan's day—the "Messrs. Ruggles from Boston" acquired the property in the first half of the nineteenth century—but the evidence of the letter makes it seem likely that the mine has had a longer history than commonly thought.

Recorded with all the quaintness of grammar common to this talented man, the letter below is to the American Philosophical Society, dated February 16th, 1781, and is contained in the third volume of the "Letters and Papers of Major General John Sullivan", edited by Mr. Otis Hammond of the New Hampshire Historical Society.

"*Gentlemen* I have the Honor to present your Learned Society with a Fossil lately Discovered in a mountain about Seventy Miles from Portsmouth in New Hampshire.

"The mountain is exceeding Large & seems to be filled with Quarries of this Natural Concrete. It has some Properties of Common Glass, and possesses others which render it in some Respects Superior. It is equally Transparent, does not waste or Consume in Fire, receives any Colour or Dye, and will not perceptably diminish in Weight or Size by Frequent Attrition. But is preferable on Account of its not (being) Frangible, Dissoluble, or Friable. Though This Fossil has not been before Discovered in America it was Long since known in other Parts of the World; it appears to have the same Qualities as the Lapis Specularis of the Ancients, and does not materially Differ Either from the Venetian or Muscovite Talc: It has not the Reddish Color of the former, and is perhaps Exceeded in whiteness by the Latter: but is in Transparency equal to either. It may be cut out in Large Stones and (Like those) be Easily Separated into Thin Laminae which appear Smooth, Glossy, & Transparent. It answers the same Purpose of covering Pictures making Lanthorns & window Lights, & though not Similar in all Respects is (in my Opinion) Substantially the same. I do not Therefore present it as a Concrete hitherto unknown, but to afford an opportunity for the Learned and Curious of your Society to Investigate the Causes of its Concretion: & Examine into its usefulness in the Mechanic Arts.

"M'r. Secretary Thomson will be so obliging as To Lay it before you and I persuade myself that through your Influence it will receive a Place among the natural and useful Productions of America."

* * * *

Grafton Center is just about seventy air-line miles from Portsmouth. By road, it is nearer ninety; but it is very possible that General Sullivan's informant was referring to the distance between the two

places as he himself might travel—through the woods.

Of one thing, we can be quite certain; that when the early settlers entered this part of New Hampshire, they did so up the valley of the Smith River, as being the easiest route in a rugged terrain. And as the Ruggles pegmatite is just adjacent to the Smith River, its mica would seem likely to have been discovered before that of other locations in more remote sections of Grafton township.

At least, the General's "Fossil" has certainly proved itself to be one of the "natural and Useful productions of America"—there are few industries that would not find themselves embarrassed in one way or another, by a shortage of this remarkable mineral. And if General Sullivan was well informed, the Ruggles Mine, or at least *one* of the Grafton Center mines, was the first producer of this important material in the country which

(Continued on page 509)

# NOVICE COLUMN

In the Sept.-Oct. 1953 R&M, Gordon ViGario, 2231 Pine St., Bakerfield, Calif., suggested that a Novice Column be opened for rank beginners in mineral collecting. These amateurs, who do not know one mineral from another, may submit their names to the Novice Column.

It is our hope that collectors having duplicates may donate a few specimens to one or more novices who are expected to acknowledge receipt of specimens received and to reimburse each sender for postage paid on the packages. Please print or write plainly the names and localities of all specimens sent novices, and if 2 or more minerals appear on the same specimen, identify each. Remember the novices do not know one mineral from another, so please be as helpful as you can.

The following is the 12th list of novice collectors.

James B. Napier (11 yrs.), 1601 E. Hampton, Tucson, Ariz.

L. O. Stapleton, P. O. Box 32, Clipper Mills, Calif.

John C. Williams (12 yrs.), Rt. 5, Box 540 Visalia, Calif.

Stephen O. Pell, 1333 Riverside Drive, Wilmington 3, Del.

Mrs. Pete Fountain, P. O. Box 85, Moscow, Idaho.

Fred Nelson, 2216 Elizabeth Ave. Zion, Ill.

Danny Bach (10 yrs.), Hardin, Ill.

Mona Wyse Cole, 159 Elm St., Bangor, Me.

Lorne D. Berzley, 327 Davis St., Allegan, Mich.

Colleen Horecki, 6133 Jones Rd., North Branch, Mich.

Mrs. Betty E. Ewing, 117 N. Mersington, Kansas City 23, Mo.

Marvin E. Scott, Banner, Mo.

John F. Weissert, 2067 Westfield Ave., Scotch Plains, N. J.

James and George Blitz (10 yrs. and 13 yrs.), 83-15 Lefferts Blvd. Apt. 3 N, Kew Gardens, N. Y.

Leo Vermann, Coxsackie, N. Y.

Kenneth Snitch (11 yrs.), P. O. Box 172, Bedford, Ohio.

Tom Carleton (15 yrs.), 4128 Caruth Blvd. Dallas 25, Tex.

Sharon A. Pursifull, (9 yrs.), 384 Merrimac Ave., Hampton Virginia.

Mrs. Harry E. Redfern, Box 396, Republic, Wash.

Mrs. M. P. Hughes, Box 5037, Cristobal, Canal Zone.

# Collector's Column

**Conducted by A. Cal Lector**

This column, designed to be a help to beginners in mineralogy, began with the September—October 1948 issue. The last issue our subject was Limonite. This time let us consider magnetite, an important ore of iron.

### Magnetite

Magnetite is associated with a variety of rocks—plutonic, pegmatitic, and metamorphic—and in sands derived from weathering of these rocks. It is commonly massive, sometimes granular and as disseminated grains. Magnetite also occurs in fine crystals, usually as octahedrons but occasionally as dodecahedrons. Magnetite is essentially ferrous and ferric iron oxides ($FeO$-$Fe_2O_3$ or sometimes written $Fe_3O_4$). It is iron black, has a metallic luster and gives an iron-black streak. On Moh's scale the hardness is 5.5 to 6.5 It is magnetic, a feature that helps to identify the mineral Very strongly magnetic material possessing polarity is called lodestone. Polarity of lodestone may be exhibited by suspending a piece of the mineral on a string. One end will point toward the magnetic pole which is located near the earth's north pole.

Although it is less magnetic, Franklinite, from the famous zinc mines of Franklin and Sterling Hill, New Jersey, is considered a zinc-rich member of the magnetite family.

The name magnetite came from the locality Magnesia, bordering Macedonia. According to some reports, the material was located when iron in the staff and shoes of a shepherd was attracted to the ground.

Large deposits of magnetite have been worked in many places. A few of these are the Adirondack Mountains of New York; Cornwall; Lebanon County; Pennsylvania; and in Norway and Sweden. Fine crystals have come from Tilly Foster mine near Brewster, New York; the French Creek mines near St. Peters, Chester County, Pennsylvania, and the Iron Springs and Iron Mountain areas of Iron County, Utah. Black sands, rich in magnetite, are found in Alaska and numerous localities in the United States.

An interesting exhibit for your collection would be a piece of lodestone with nails or other pieces of iron attached to show the feature of a natural magnet. Try to obtain some today.

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Tourmalines by the case

(Continued from page 460)

create different surface textures but without sacrificing mechanically-sound design and good soldering practice. An item of jewelry from his bench is sure to have all the qualities of permanency normally associated with heirlooms.

One other item should be mentioned before closing this article and that is, a collection of scenic slabs exhibited by Mrs. F. C. Van Pelt of San Diego. Though not really lapidary work other than the sawing, flatting, and polishing of the slabs, they nevertheless excite much admiration for the natural patterns on their surfaces which, with a few key words cleverly supplied, instantly become clearly recognizable as scenes in nature, such titles as "The Tundra", "Distant Vistas", and "Spring Rain", are a few of the best selected.

It isn't possible within this article to mention all of the award winners let alone those who did not earn an award, but almost without exception, each case had something in it which was beautiful and interesting. In the matter of tourmalines alone, the exhibit is worth traveling many miles to see; one cannot grasp the scope of the minerals in the San Diego area unless this is done.

# Club and Society Notes

**Attention Secretaries**—Please submit neat copies. Give dates and places of meetings. Check names for correct spelling.

## East

### Mineralogical Society of Pennsylvania
(July Field Trip)

The July Field Excursion of the M. S. P. was held Sunday, July 17th, 1955, at the quarries of Messrs. Anthony Ferranti and son, Bernardsville, N. J., with 104 persons registered. In spite of the high temperature, which no one seemed to mind too much, the immense piles of loosed rock were attacked with enthusiasm.

The finds, while of small size, were attractive and interesting to the collectors. Species secured were amethyst, white and golden brown stilbite, natrolite, pectolite and a large variety of beautiful calcite forms.

### Field Trip August 1955

The August excurson of the M. S. P. was held Sunday the 14th at the John T. Dyer trap rock quarry, Monocacy Station, near Birdsboro, Berks County, Pa. Registered attendance 154 members and friends.

This quarry has produced many high quality zeolites in its long career, and has doubtless many excellent specimens still locked in its mighty rock masses.

White stilbite has been a plentiful product for many years and the most notable find of this mineral, on this occasion, was by Mr. P. D. McFarland who discovered some rich veins of it. Many were the finds of sharp, golden calcite crystals, which while generally small, were quite attractive. There were also specimens of chalcopyrite, titanite, prehnite and chabazite found occasionally.

Unfortunately showers of rain proved a handicap at various times along with a large

Photo by Harold Evans

**Hard at work collecting at Ferranti's quarry, Bernardsville, N. J. Left to right—Dr. Arthur Hopkins, past president of M.S.P. and Dr. John Oleksyshyn, noted European geologist who is now an active member of M.S.P.**

deep pond on the quarry floor, formed by torrential rains in the past several days. Nevertheless the majority of those present had an enjoyable time and many were the discussions of various vacation mineral trips, taken by members. Probably the longest one was that of Mrs. Charles Belz, to San Francisco for the Lapidary Convention and which was later extended to Southern California and Mexico. She has no doubt a wealth of many interesting experiences which we hope to hear about in the near future.

It was a pleasure to hear of the success of junior member Robert K. Shope, Camp Hill, receiving a Government Bond as an award for his entry in the 1955 Program of Science Achievement, for students, by the Future Scientist of America Foundation. National Tteachers Association of Washington.

Harry W. Trudell,
Publicity.
1309 Highland Ave.
Abington, Pa.

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**Mineralogical Club of Hartford**

The Mineralogical Club of Hartford, Conn., held its annual meeting May 11th and elected the following slate of officers: President, Ralph Hills; Vice President, Robert Brandenburger; Treasurer, Mrs. Elizabeth Behrsing. No one would take the post of secretary so its was necessary for the Executive Board to appoint, which they did at a meeting held July 13th at the home of the President. Miss Ruth M. Cowdell finally agreed to assume the duties of Secretary with help of Mrs. Mable Hart.

We have field trips scheduled as follows: Sept. 11th—New England Limestone Quarry, East Canaan, Conn. Oct 9th—Silex Quarry, Lantern Hill, No. Stonington, Conn. We will resume regular meetings on Sept. 14th at Boardman Hall, Hartford.

Ruth M. Cowdell
Summit Road, RR 1
Waterbury, Conn.

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**Bellows Falls Rock & Mineral Club**

On June 26, 1955, the Bellows Falls Rock and Mineral Club of Bellows Falls, Vermont, held their annual meeting at the home of Dr. and Mrs. Edward Lamphere, Weathersfield, Vermont. There were seven Charter Members present among the members at this meeting. Mrs. Edward Lamphere served lovely refreshments to all.

The new officers elected for the ensuing year are: V. Robert Call, President; Frederick Nies, Jr. Vice President; Mrs. V. Robert Call, Secretary-Treasurer.

Mrs. V. Robert Call,
Secretary
15 Atkinson Street,
Bellows Falls, Vermont

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**Newark Mineralogical Society**

Mr. Gene Vitali, former president of the Newark Mineralogical Society, was the guest speaker at the April meeting. His subject was "Collecting Minerals in the First Watchung Range in New Jersey" In describing the geological formation of the Watchung ranges

**Lower quarry of Anthony Ferranti & Son Bernardsville, N. J. (July 17, 1955)**

**Photo by Harold Evans**

he spoke of theories on the formation of the rare and beautiful minerals found here. His talk was illustrated with colored slides, taken for this purpose, showing the gem and mineral bearing strata in the Prospect Park, New Street, Great Notch, Consolidated and Braen's Quarries. Another picture showed a residence formerly owned by Dr. Vitali, in which the builder had used many minerals collected from the New Street, Sauerbutt and Prospect Park quarries. Many rare minerals, seldom found now in these quarries, were used in the decoration of this home.

Mr. Vitali contrasted the experiences of the early collector with those of the mineral collector today—in the '40's mineral collectors were few, excellent specimens were plentiful and collecting comparatively easy. Conditions have changed, however minerals are not as plentiful, the number of collectors has greatly increased, and quarry owners for various reasons do not welcome the numerous collectors on their premises. The way of the collector is indeed increasingly difficult. Mr. Vitali took occasion to remind collectors to respect the rules of the quarry owners, and to obtain necessary permission before entering premises.

Among the minerals found in the First Watchung Range were the zeolites. anyhydites, chabazite, glauberite, heulandite, stilbites, apophylites, amethyst, agate, malachite, chrysocola, and many others. A display of rare and beautiful specimens was arranged by Mr. Russ DeRoo, Display Chairman. The specimens shown were from Prospect Park, Braen's, Consolidated, Great Notch, New Street, Sauerbutt and other quarries, all in the First Watchung Range.

Mr. Louis Shaw, President, announced that in October of this year the Newark Mineralogical Socity would celebrate its 40th anniversary. He requested Mr. Vitali to assume chairmanship of a committee to plan for an appropriate celebration of this event. Plans will be announced in the near future.

The speaker for the May meeting Dr. Brian H. Mason, Curator of Minerals for the American Museum of Natural History in New York City. Dr. Mason has collected minerals in many parts of the world. His talk at this meeting was entitled "Collecting Minerals in South Africa." The colored slides illustrating his lecture were beautiful and the wealth of minerals displayed were a delight to the heart of the collector. Pictures of some of the localities visited were from Wales Bay, Mozambique, Rift Valley, Lake Nyassa, Victoria Falls, Southern Rhodesia and Johanesberg. Pictures of many mine workings were shown as well as the minerals to be obtained.

Dr. Mason's talk was as entertaining as it was informative, and we were fortunate in having him with us at this meeting.

In April this Society joined the North Jersey Mineralogical Society in a field trip to the Foote Mineral Company of Philadelphia. Foote Mineral Company has been a hospitable and generous host to numerous groups of mineral collectors and true to form, they entertained this group of approximately 100 people in their usual manner. The members were escorted through the plant, processes were explained, refreshments were served, and last but not least, the members were invited to help themselves to specimens from their store of minerals. We owe Foote Mineral Company a vote of appreciation on behalf of all who attended this field trip.

Following a plan announced early this year by Mr. Schroeder, Program Chairman, programs on alternate meetings have been conducted by membern of the Society. Mr. Al White, President of the Eastern Federation of Miieralogical and Lapidary Societies, was our "member" speaker at the June meeting. His topic was "Federation Aid Program", and he presented a group of approximately 70 colored slides, property of the Eastern Federation—standards and micromounts—of rare minerals from all parts of the earth. Many of these slides have been lent or duplicated from Mr. Ben Chromy's beautiful collection.

The collection shown is one of a number to be made available for use of member societies of the Eastern Federation. Explanatory comments accompany the slides. The presentation was thoroughly enjoyed, and this plan will make excellent program material available to our societies.

On May 7th, members of the Newark Society went to Rhinebeck, New York, on a field trip, where some fine specimens of quartz were secured.

Mr Vitali reported that plans are under consideration for the celebration of the 40th Anniversary of the Newark Mineralogical Society, and announcements will be forthcoming the early part of September.

Mrs. Louis W. Bortgstrom
Elcock Avenue
Boonton, N. J.

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### Mineralogical & Lapidary Clubs of Washington, D.C.

The Mineralogical and Lapidary Clubs of the District of Columbia joined together for a fine field trip to the famous quarry of the Pennsylvania Glass Sand Corporation located at Hancock, West Virginia. This quarry has been in continuous operation since 1867 aid is widely known for the quality and purity of its silica, hence the lovely quartz crystals to be found there make beautiful specimens for mineral collectors and excellent material for lapidarists.

According to Dr. Carl B. Gerber of Arlington, Virginia, the leader of the trip and one of the Directors of the Mineralogical Club of D. C., quartz crystals are one of the most desired mediums of the hobbyist in cutting stones and fashioning jewelry as well as the hobbyist who collects specimen pieces as does Mr. Gerber

The quartz silica from this quarry is widely used also in the making of fine glass ware, porcelains, glass cooking ware, scientific instruments of mary kinds. chemical and abrasives. The geologists calls the deposit Oriskany Quartzite. There is also to found in this area fossils of unusual character in that the original animals and plant life has been replaced by quartz, whereas most fossils obtainable show a replacement of limestone.

The trip was made most pleasant through the courtesy of Mr. E. A. Andrews, a Graduate Civil Engineer and the Vice President of the Penn; Glass Sand Corp. and Manager of the Hancock plant, who has for many years been interested in geology and minerals. Mr. Andrews received the group and arranged for an extremely interesting and informative tour thru the plant following the collecting time.

Forty-three members of the combined clubs made the trip to Hancock on one of those rare cool August days. The countryside was lovely due to the recent advent of Diane and Connie whose terrorism of the northeast part of the country, produced here much needed moisture. Peaches were being harvested, but the apples hung in ruddy abundance in all the high country. The pleasant day was capped for several groups by picnic supper in the lovely Capacon State Park on Route 522.

Kathryn D. Gerber,
2353 S. Nash St.,
Arlington 2, Va.

# South

### Southern Appalachian Mineral Society

Fifty members of the Southern Appalachian Mineral Society enjoyed a very interesting and profitable field trip to Ashe county, N. C., August 27, 1955, with Dr. and Mrs. Douglas Sterrett and Dr. and Mrs. Martin Wadewitz and Martina Wadewitz acting as hosts.

The first location, which included two adjacent mica mines, provided good specimens of green apatite xls in quartz and spar as well as occasional specimens of golden beryl xls. Bright red garnets also were included in some of the apatite specimens found.

The second location visited in the afternoon provided all members with specimens of beryl ranging from golden to green.

Fred M. Allen
Lincolnton, N. C.

### Chattanooga Rock and Minerals Club

The Club met Tuesday May 10 at 7:30 in Room 108 Brock Hall, Univ. of Chattanooga, Chattanooga, Tenn. Geo. C. Olmsted, who had just returned from the winter in Florida, discussed extinct mammals and arresian wells in the Sarasota area. Fossil teeth and bones are found at several places on the mainland side of the bay but none have been noted on the keys, either bay side or gulf side. Artesian wells about 250 feet deep and within 30 feet of salt water, yield fresh water but with the odor of sulphur. Since sea water contains several sulphates and since the State has been inundated a number of times, bacteria have released sulphur, thus accounting for the sulphurous odor of the well water.

The Club met Tuesday June 13 at 7:30 in the lecture room over the Northside Branch of the Hamilton National Bank. President B. J. Cate had the program and for his subject took a lecture on Crinoids. He discussed their origin, history, habits and showed fosil heads and stems, explaining the functions of the various parts. The stems may reach a length of 70 feet or over. His address was scholarly.

The meeting was unusually well attended. It was decided that the Club should do a bit of geological study as a group and a committee will be appointed. On account of convenient parking it was agreed to hold future summer meetings in this room.

Accepting the kind invitation of Mr. M. L. Hogshead, Jr., the Club met July 12 at 7:30 at his hme at 505 Boulder Place, Siginal Mountain. The attendance was good and all enjoyed an informal meeting chatting and watching Mr. Hogshead demonstrate various techniques in faceting, polishing cabochons and sphere cutting. He showed excellent samples of his work in faceted amethyst, sapphire, aquamarine and topaz, as well as many samples of polished agate.

The August 10th meeting of the Club was held at 7:30 in the lecture room over the Northside Branch of the Hamilton National Bank. In accordance with the decision of the June meeting, two members provided study subjects for the Club. Pres. B. J. Cate gave a blackboard discussion for the geological time table, briefly touching upon the eras and epochs, their ages and forms of life.

He was followed by Mr. Ralph Bullard who presented well prepared maps and charts showing local formations as they occur in our mountains and across the great Tennessee Valley. Much interest was shown in these addresses and both speakers were questioned at length.

It was decided to investigate the feasibility of having a Club exhibit in the September County Fair.

Geo. C. Olmsted.
Publicity
1129 James Blvd.
Signal Mountain, Tenn.

# Mid-West

### Minnesota Mineral Club

The Minnesota Mineral Club was awarded the trophy for the most interesting Club Display at the Midwest Federation Convention which was held in Detroit, Michigan. Two

members from the Minnesota club were elected officers of the Midwest Federation: William J. Bingham-Pres. and Arthur Anderson-Vice-Pres.

Extensive planning is being done by D. A. Thomas as chairman for the National Federation Convention for 1956 to be held in St. Paul, Minnesota, with the Minnesota Mineral Club and Midwest Federation as hosts. William J. Bingham and Hazen Perry are serving as advisors.

Mrs. Nadyne Glaser,
editor
Rock Rustlers News
Minnesota Mineral Club
2400 Bourne Ave.
St. Paul 8, Minn.

# *Rocky Mountains*

### Cheyenne Mineral & Gem Society

The June meeting was cancelled so that the club members could attend the RMFMS and the Wyo. State joint convention at Rawlins. The Cheyenne Mineral & Gem Society members exhibited 35 cases of rare agates, gems, orginal jewelry, xls, petrified woods, and artifacts. Over 50 Cheyenne club members attended the 3 day sessions. The club members then went on a 2 day field trip to the Jade fields, agate and wood beds.

July...A 3 day field trip over the 4th of July. There were 7 cars in the caravan. We went first to the Fairburn agate beds near Orella, Nebr., where some lovely fairburns, red & yellow moss agate and beautiful xl lined geodes were found. From there to the fossil seed area where we found petrified walnut meats, dinosaur bone and fossil teeth. Then to Morrill, Neb., for a joint picnic with the Torrington Club at Chas. Morrills, Sun. noon; Sun P. M. the group drove over to Guernsey Dam for more fairburn agate and moss agate hunting., arriving home late Mon. nite. The weather was perfect for camping, on the whole trip.

August...The Cheyenne Min. & Gem Society had an all day picnic and field trip to Tie Siding, where some lovely clusters of quartz xls covered with hematite were found. The xls have to be dug out of the banks.

The Cheyenne Mineral & Gem Club meets the first Fri. of each month at 7:30 P. M. in the Womans Club Rooms at Carnegie Library. Visitors are always welcome. The regular Sept. meetings will be held Sept. 9, because of the Labor Day weekend at which time a field trip into the Jade fields is being planned for the club members.

Mrs. R. J. Laughlin,
Corres. Sec.
204 E 3rd Ave.
Cheyenne, Wyo.

### Mineralogical Society of Arizona

Memebers of the Mineralogical Society of Arizona were saddened to learn of the death of Carroll V. Mills on July 8, a long-time, active member of the society. Mr. Mills was retired. He and his wife, Gertrude, came to Arizona some years ago for his health. Mr. and Mrs. Mills were co-owner of a beautiful collection of minerals, and exchanged with collectors all over the country.

Another member, Charles H. Preston, also passed away in June of this year. Not too well known in the Phoenix group as he only resided in Arizona during the winter, he was prominent in the Midwest Federation and the American Federation.

Ida Smith, Cor. Secy.
2010 West Jefferson,
Phoenix, Arizona

# *West*

### Roxy Ann Gem & Mineral Club (Medford, Oregon)

The Roxy Ann Gem and Mineral Club was host on June 18 and 19 to the southern Oregon gem clubs at Medford. Grants Pass and Roseburg joined in bringing many cases. Our own club members filled the 40 new cases built by the club and contributed many of their own. with their choicest agates and mineral collections. Chester Fitch and John Ross kept a slide show running of transparencies of moss, carnelian and sagenite agates. The Olsons ran the fluorescent display at the other end of the gym. On June 18th Senator Lowery unveiled the rock map of Oregon cut and polished by the members of the club from Oregon rock. The snack bar and grab bag counter were kept busy, and guests pored over the wares of 15 dealers. We were exceptionally fortunate in having many of the finest displays in Oregon as guest exhibitors, including Stanley Brown's agate dishes. Northern California guests brought eye agates and Virgin Valley opal, and the McCormacks came all the way from Idaho with a display of Morrisonite. The club had assembled a display of iris agate which was mounted on a panel with a moving light to flash the rainbow colors through the stones as it moved. There was also a cooperative case of scenic jaspers, another of pink, blue and eye agate, and panels of hairstone. About 2,000 guests kept the aisles crowded with interested spectators, end even the hard-working chairman Mr. Leland Mentzer, and his helpers had time to enjoy visiting with fellow rockhounds.

**East Bay Mineral Society, Inc.**

President - Robert Chisholm
V. Pres. - Clarence Wall
Secty. - Juanita DiVita
Editor - Betty Patterson
Directors - Dennis Patterson
" Sidney Smyth
" Frank Wilcox
Librarian - Mrs. Harold Ladwig

July and August are vacation months for our Sociey but we do have summer field trips so that we keep in touch. In July we gathered Lake Country Diamonds which are a most interesting form of shattered quartz. One of our new members made the remark the first time we visited this location "Someone sure broke a lot of milk bottles up here didn't they"? In August we went to Bolinas Beach where we collected most interesting oil agates that fluoresce very nicely and also petrified whalebone.

Incidentally, we feel very proud of ourselves, for the third year in a row we have won First Prize for our Mineral Entry in the California State Show. This year our Society will receive a permanent plaque stating that we have successfully accomplished this three year feat. For the two years past we have received First Prize also for our Lapidary Entry but this year we got Second Prize, but we still feel very pleased with our effort.

Betty Patterson
Editor
P. O. Box 1196
Oakland 4, Calif.

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**The Los Angeles Lapidary Society**

Since only a few of the amateurs have attempted diamond cutting, the talk presented by Mr. Maurice Pinto at the July meeting, proved most helpful and informative.

Regular meetings of the Los Angles Lapidary Society are held the first Monday of each month at the Van Ness Playground, 5720 2nd Ave., Los Angeles, Calif.

Mrs. Jessie Chittenden will speak to the Los Angeles Lapidary Society on Enameling at the September meeting which will be held September 8, 1955 at 8:00 p.m.

The rock auction held at the August meeting was a tremendous success. Profits were sufficient to defray all expenses of the annual picnic which will be held September 18 at Tapia Park.

Avonia Glidden
Corres. Sec.
6110 Rimpau Blvd.
Los Angeles 43,
California

# COLLECTORS KINKS

**Hardening Laumontite**

Here is a cheap and simple way to harden laumontite. I tried many ways and finally I came across a good one. This, however, is my opinion. All I use is a household starch—Zippy Liquid Starch. This starch costs about 25¢ at the most, and is blue in color but the color has no effect on the mineral.

Fill vessel with enough starch to cover the specimen (laumonite) and leave soak for 5 or 10 minutes. Take out, shake to get rid of starch, also blow with breath to get off excess starch. Place specimen in sunshine for day to dry out—result mineral will not fall apart but will remain beautfully white and preserved:

(Note:-do not dilute this liquid starch but use it as it comes from bottle.

Joseph Barr
419-33rd St.
Union City, N. J.

July 6, 1955

(Editor's note:-R&M would appreciate notes for this department)

# Looking Back Twenty-Five Years Ago

**in Rocks & Minerals Sept. 1930 issue**

*Corundum Hill and the old rhodolite mine of Macon Co., N. C.*, by Franklin G. McIntosh, pp. 90-91. Corundum Hill, noted for corundum and the rhodolite mine for garnet (rhodolite) are both near the town of Franklin, N. C.

*The Field Museum of Natural History*, pp. 92-97. The Field Museum (now the Chicago Museum) was founded in 1893, in Chicago, Ill., as a result of a $1,000,000 gift made by Marshall Field. Its mineralogical department is famous for the large number of rare and beautiful minerals.

*Idar—The home of the precious stone industry*, by George O. Wild, pp. 98-99.

Idar is noted for being the central market place for the whole world for semi-precious stones.

*The Gem Department*, conducted by Gilbert Hart, pp. 100-101. Topaz was featured in this issue.

# Publications Recently Received

*Evans—Adventure Book of Rocks*
By Eva Knox Evans, 1955, Illustrations by Vana Earle, 7¼ x 10¼ - Published by Capitol Publishing, Company, Inc., Irvington, N. Y. .. ..... $2.50

Approaching the subject of rock collecting in the informal manner familiar to readers of her books on anthropology, Eva Knox Evans has written an inspiring hobby starter for the young enthusiast.

Rocks are everywhere, and a pebble can sometimes tell the story of a great volcano that erupted millions of years ago. With this introduction, Miss Evans takes the young collector on an exploratory trip over and into the the surface of the earth.

She tells about the first man who learned to bind a rock with a rope of animal skin and invented the first tool; about the Indians who used stone tools to fashion beautiful gold and silver jewelry; about blackboards, oil, uranium, silver and coal—all minerals found in rocks; about a rock called magnetite, which is really a magnet; about geodes, petrified resin and "gizzard stones."

Important to the young collector is the ability to distinguish between rocks, stones and minerals—and Miss Evans makes this easy reading. Equipment, choice locations, trading, specimen cabinet construction, arranging the collection — all are described. Simple color and hardness tests are suggested for identification. A comprehensive chart, locating some of the more important rocks and minerals found in each state, is included. While interest in rock collecting may lead to the careers of geology, jewelry making or sculpture, Miss Evans in the ADVENTURE BOOK OF ROCKS opens the door to a fascinating wonder world for the whole family to enjoy.

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**QUICK—Rockhound Buyers Guide**

Edited and compiled by Lelande Quick, Editor and Publisher of the Lapidary Journal, Del Mar, Calif., 168 pages, illustrated—$2.00

This is the 3rd edition of the Guide. The first two editions were enthusiastically received and acclaimed. This new edition contains all new collecting spots and trips. It contains hundreds of new listings of dealers and their products. It is a new guide.

The rockhounding hobby has grown faster than ever during the last year. At least 50 new gem and mineral clubs have been organized and at least a hundred new dealers have entered the business while some of the older ones have liquidated or been liquidated by time. New forces have entered into the

**Arizona Publication**

*One hundred Arizona minerals,* by Richard commercial end of the hobby, particularly into the manufacturing end of the business, and the uranium locator business. Important capital is being attracted and men with more experience backgrounds in merchandising are entering the field.

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T. Moore.

This Bulletin has been prepared to help the beginners or those who have had no formal training in the subject, to become familiar with approximately one hundred of the minerals which are either common in Arizona or are found in a few other localities. Wherever possible, non-technical language has been used, but the reader should remember that mineralogy is a science and therefore some technical terms are unavoidable. Those technical terms used, however, are explained.

Published by the Arizona Bureau of Mines, Tucson, Ariz., as Bull. No. 165 (35 pages) —Price 30¢ (free to residents of Arizona).

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**California Publication**

*Geology and mineral deposits of the Calaveritas quadrangle, Calaveras County, California,* is the title of the Division of Mines' most recent publication, issued as SPECIAL REPORT 40, Olaf P. Jenkins Chief of the Division, announced recently.

Written by Loring D. Clark, member of the U.S. Geological Survey, the report details the geology of an area in the western foothills of the Sierra Nevada.

Gold, historically the most importait mineral commodity produced in the quadrangle, is now exceeded in the value of its annual production by limestone. Chromite has been mined intermittently; copper and iron are know to exist, and puzzolana, asbestos, and talc are potential economic commodities. Within the quadrangle the strongly deformed bedrock complex is locally covered by small deposits of undeformed stream gravels and rhyolite tuff.

SPECIAL REPORT 40, consisting of 23 pages, including 7 illustrations, and the map, is priced at $1.75; the map may be purchased separately for $1.25. A 3 percent sales tax is required of all California residents. Copies may be obtained by mail order from the Divisioi of Mines, Ferry Building, San Francisco 11, or over-the-counter at any of the Division offices in San Francisco, Los Angeles, Redding, or Sacramento, Calif.

### New Mexico Publication

*Regional Tectonics of the Colorado Plateau and Relationship to the Origin and Distribution of uranium,* by Vincent C. Kelly.

The prinicpal objective of this project has been to determine the relationship between regional structure and regional concentration of uranium deposits. In order to accomplish this it was necessary to obtain a wide knowledge of (1) the regional structure, and (2) the tectonic history. In order to accomplish the first objective a new tectonic map of most of the Colorado Plateau was compiled. This was a slow process involving collecting and adapting data from many sources and filling in numerous gaps where possible from field or office studies. The second objective is the more difficult and is actually the crux of the problem, and lack of data here is one of the principal reasons why the origin of the deposits and regional tectonic relations are not better understood.

Published by the University of New Mexico Press, Albuquerque, N. Mex., 1955 (120 pages, 8 plates, 17 figures)—Price $2.00

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### Virginia Publication

*Geology and Oil Resources of the Rose Hill District—the Fenster Area of the Cumberland Overthrust Block—Lee County, Virginia,* by Ralph. L. Miller and J. Osborn Fuller.

The principal mineral resources of the area are oil and iron. Beds of hematitic iron ore in the Clinch sandstone and Clinton shale of of Silurian age were mined in several parts of the district, prior to the time of the first World War, but the deposits are no longer considered of economic importance because of their thinness and iow grade.

Exploration for oil and gas began in 1910, but the first well to obtain significant production was not completed until 1942.

Published by the Virginia Geological Survey, Charlottesville, Va. as Bull 71 (383 pp., 50 pl., 17 figs).

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### Canada Publication

*Zinc and Lead Deposits in Lemieux Township, Gaspe-North County, Jue., Canada,* by P. E. Auger.

The zinc and lead deposits in the south-central part of Lemieux township, some of which have been known for over 30 years, were examined during the 1942-43 and 44 field seasons. Another examination, made in February, 1953, enabled the writer to obtain geological data resulting from the program of exploration and development undertaken by Federal Metals Corporation, which has held the property under option since 1950.

Published by the Department of Mines, Quebec, Que., Canada, as Geological Report 63, (59 pp., 1 map, 5 figs.)

### French Publication

*French Bibliographical Digest — Science (Crystallagraphy—Mineralogy).* Accompanying the Digest was the following letter:

"I am sending you here with the latest issue of the French Bibliographical Digest, which, I trust, will be of some interest to you.

"This bibliographical series is published primarily to further closer relations between French and American scholars. My hope is that by presenting a selection of the best French scientific writings, the French Bibliographical Digest will serve at once as a guide and a reminder to you of the contributions made to science by French scientists. Its publication may also invite Americans to correspond with their French colleagues engaged in the same type of research for the greater benefit of science in general, and we hope, of Franco-American friendship.

"We have endeavored to use for the presentation of the French Bibliographical Digest a form which meets, I believe, American standards in bibliography. However, I should very much appreciate receiving your opinion on that point as well as your suggestions as to possible improvements in presentation and contents."

*Pierre Donzelot.*

The French Bibliographical Digest is edited and published by the Cultural Division of the French Embassy, 972 Fifth Ave., New York 21, N. Y.

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### Minerals Unlimited Fine Mineral List

Minerals Unlimited, 1722-28 University Ave., Berkeley 3, Calif., have released a 5-page list of fine mineral specimens now in stock. The minerals are alphabetically arranged and are from world-famous localities, chiefly foreign. Readers desiring some fine mineral specimens should rush in their orders before choice items are all gone—first get a copy of the Fine Mineral List.

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## Fossil Department

(Continued from page 500)

weighed about 85 pounds. It was turned up by an excavating machine from about 16 feet below the general land surface. The original composition of Calcium Carbonate has been almost entirely replaced by Silica. It was embedded in a very hard and tough red clay matrix, and after a lot of cleaning with a water pressure hose to dissolve the clay fillings ,each hex cup stands out bold and sharp. The color of the specimen is reddish brown due to the iron oxide content of the surrounding clay."

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